

GRAPHIC SCALE IN MILES

Base Data: U. S. Geological Survey

KENTUCKY RIVER

○ U.S.G.S.

△ Kentucky Division of Water

## THE KENTUCKY RIVER BASIN

This report is basically divided into two main sections, the first section being a description of the basin and the second section dealing with the quality of the water in the basin.

The first section is entitled "Basin Description" and describes the geography, topography, geology, hydrology and population characteristics within the Kentucky River Basin.

The second section of the report is entitled "Basin Water Quality" and describes the quality of the water with respect to general chemical, trace chemical, waste load effects, non-point source effects, uses, and changes.

### I. A Description of the Kentucky River Basin

#### A. Geography

In an effort to better describe the Kentucky River Basin it will be divided into two sections. The first section (hereinafter referred to as the "Headwater Section") begins at the headwaters and ends at the City of Irvine and includes the three major forks of the river and 37 miles of its main stem. The remainder of the basin (hereinafter referred to as the "Bluegrass Section") will further be divided into inner and outer sections. The main stem of the Kentucky River is 255.5 miles long from its mouth to the confluence of the North, Middle and South Forks.

The Kentucky River Basin lies wholly within the State of Kentucky and the river flows in a northwesterly direction. It begins in southeastern Kentucky, flows through the central part of the state and empties into the Ohio River at mile point 435.6 in North Central Kentucky.

The total area of the basin is 7,033 sq. mi. and contains eight sub-basins with areas of over two hundred sq. mi.. (See Table H-1) The basin contains, either wholly or partially, 36 of the 120 counties in the State. (See Table H-2)

### B. Topography

The Headwater Section is a mountainous area and is heavily mined for coal. Therefore, the water has a considerable sulfate content and is slightly acidic in the immediate coal mining areas. The average slope of the tributaries in this section ranges from 3 ft./mi. to 7.2 ft./mi. which are moderate slopes and it can therefore be said that the waste load assimilation capacity of the tributaries in this section is moderate. The average slope of the main stem of the river in this section is approximately 0.9 ft./mi. which is a low slope for reaeration.

The maximum elevations of the tributaries in this section range from 760 feet to 1,250 feet mean sea level (m.s.l.). It should be noted that water will hold about 2 per cent less dissolved oxygen for every 500 feet in elevation above sea level. Therefore, the dissolved oxygen capacity of these streams is retarded by approximately 4 per cent.

The Bluegrass Section lies in north-central Kentucky and is a structurally high but physiographically level area. The average slope of the tributaries in this section ranges from approximately 3 feet per mile to 32 feet per mile which are moderate to high and it can therefore be said that the waste load assimilation capacity of the tributaries in this section are moderate to high. The average slope of the main stem of the river in this section is approximately 0.7 ft./mi.

The maximum elevations of the tributaries in this section range from 710 feet to 950 feet m.s.l. and therefore the dissolved oxygen capacity of these streams is retarded by approximately 3 per cent. (For more detailed

information regarding slopes and elevations see Table H-3)

### C. Geology

For the purposes of this report the most significant geological feature in the Headwater Section is the coal resources. Due to the mining activities including the stripping, washing, and loading of coal, there is a great amount of exposed coal in this area. The runoff is rapid and carries a considerable amount of solids to the streams. There are also thin beds of limestone in this area which contribute to the hardness of the water. Because of greater relief and the resulting more rapid runoff of surface water and drainage of groundwater from exposed strata, groundwater is not available in adequate amounts for water supply. Groundwater supplies diminish in dry weather owing to the paucity of groundwater storage.

The Bluegrass Section can be divided into inner and outer sections with regards to geology, the inner bluegrass being underlain by thick, pure limestone and the outer bluegrass by outward dipping thin beds of limestone and shale. The limestone of the inner bluegrass, though thick and soluble, contains shaly zones which are important because they limit the circulation of water and the development of permeable zones. In the outer bluegrass the conditions are even less favorable because the limestone beds are thinner and there is more inner bedded shale. Limestone that underlies shale will rarely yield much water except near streams that have cut through the shale. The only wells in bedrock that produce more than 100 gallons per minute are in thick limestone in the inner bluegrass. Nearly all successful wells in bedrock are less than 100 feet deep. In the bluegrass region as a whole the groundwater is hard to very hard. About one-eighth of the existing wells are reported to yield water containing excessive sodium and chloride, and about one-fifth yield water containing

noticeable amounts of hydrogen sulfide.

#### D. Hydrology

The Kentucky River has fourteen dams (See Table H-8) which restrict the flow and cause a decrease in reaeration rates, therefore causing the dissolved oxygen content to be reduced when an organic load is imposed on the stream. Furthermore, the slow moving water allows suspended solids to settle causing sludge deposits which impose a demand on dissolved oxygen and can hamper navigation unless removed.

There are two water withdrawals in the basin that are significant to water quality. The City of Lexington withdraws from the Kentucky River but discharges to tributaries which enter the river below Lock 4, and the City of Winchester withdraws from the Kentucky River but discharges to another basin. The City of Winchester withdraws approximately 1.5 MGD and the City of Lexington withdraws approximately 28 MGD. These two withdrawals are not put back in the river above Lock 4 near Frankfort and therefore reduce the once in seven day, ten year low flow at the Lock by the total 29,500,000 gallons per day or approximately by 20 per cent. This reduced low flow can affect the waste load allocation and subsequent treatment levels required for the cities of Richmond and Berea.

The City of Lawrenceburg also withdraws from the Kentucky River and discharges into another basin but this withdrawal has no significant impact on water quality.

The average normal flow of the Kentucky River at Locks 14, 10, and 4 are 3,369 cubic feet per second, 5,279 cubic feet per second, and 7,199 cubic feet per second respectively. The average yield of the basin is 1.3 cubic feet per second per square mile throughout the main stem of the river. Table H-4 expands on the flow records.

TABLE H-4

## SURFACE WATER RECORDS FOR THE KENTUCKY RIVER BASIN

| STATION                           | PERIOD<br>OF RECORD | DRAINAGE<br>AREA | AVERAGE FLOW                                     | MAXIMUM FLOW                                      | MINIMUM FLOW                                   | 7-day/10 yr.<br>LOW FLOW |
|-----------------------------------|---------------------|------------------|--|---|--|--------------------------|
| N. Fork of KY.<br>River at Hazard | 36 yrs.             | 466 sq.mi.       | 581 cfs, $\frac{1.2\text{cfs}}{\text{sq.mi.}}$ * | 47,800 cfs, $\frac{103\text{cfs}}{\text{sq.mi.}}$ | Not determined                                 | 93 cfs                   |
|                                   | wtr/yr 1976         |                  | 447 cfs, $\frac{1.0\text{ cfs}}{\text{sq.mi.}}$  | 13,400 cfs, $\frac{29\text{cfs}}{\text{sq.mi.}}$  | 9 cfs, $\frac{0.0\text{cfs}}{\text{sq.mi.}}$   |                          |
| Lock 14 near<br>Heidelberg **     | 44 yr.              | 2,657 sq.mi.     | 3,638 cfs, $\frac{1.4\text{cfs}}{\text{sq.mi.}}$ | 120,000 cfs, $\frac{45\text{cfs}}{\text{sq.mi.}}$ | 4.0 cfs, $\frac{0.0\text{cfs}}{\text{sq.mi.}}$ | 120 cfs                  |
|                                   | wtr/yr 1976         |                  | 3,580 cfs, $\frac{1.3\text{cfs}}{\text{sq.mi.}}$ | 41,100 cfs, $\frac{15\text{cfs}}{\text{sq.mi.}}$  | 155 cfs, $\frac{0.1\text{cfs}}{\text{sq.mi.}}$ |                          |
| Lock 10 near<br>Winchester**      | 69 yr.              | 3,955 sq.mi.     | 5,279 cfs, $\frac{1.3\text{cfs}}{\text{sq.mi.}}$ | 92,400 cfs, $\frac{23\text{cfs}}{\text{sq.mi.}}$  | 10 cfs, $\frac{0.0\text{cfs}}{\text{sq.mi.}}$  | 160 cfs                  |
|                                   | wtr/yr 1976         |                  | 4,926 cfs, $\frac{1.2\text{cfs}}{\text{sq.mi.}}$ | 38,200 cfs, $\frac{10\text{cfs}}{\text{sq.mi.}}$  | 232 cfs, $\frac{0.1\text{cfs}}{\text{sq.mi.}}$ |                          |
| Lock 4 near<br>Frankfort ***      | 51 yr.              | 5,412 sq.mi.     | 7,109 cfs, $\frac{1.3\text{cfs}}{\text{sq.mi.}}$ | 115,000 cfs, $\frac{21\text{cfs}}{\text{sq.mi.}}$ | Not determined                                 | 270 cfs                  |
|                                   | wtr/yr 1976         |                  | 6,599 cfs, $\frac{1.2\text{cfs}}{\text{sq.mi.}}$ | 47,700 cfs, $\frac{9\text{cfs}}{\text{sq.mi.}}$   | 402 cfs, $\frac{0.1\text{cfs}}{\text{sq.mi.}}$ |                          |

Table H-4  
Continued

| STATION                         | PERIOD<br>OF RECORD | DRAINAGE<br>AREA | AVERAGE FLOW                                   | MAXIMUM FLOW                                     | MINIMUM FLOW                                  | 7-day/10 yr.<br>LOW FLOW |
|---------------------------------|---------------------|------------------|--|--|---|--------------------------|
| Elkhorn Creek<br>near Frankfort | 39 yr.              | 473 sq.mi.       | 612 cfs, $\frac{1.3\text{cfs}}{\text{sq.mi.}}$ | 23,200 cfs, $\frac{49\text{cfs}}{\text{sq.mi.}}$ | 0 cfs   | 28 cfs****               |
|                                 | wtr/yr 1976         |                  | 566 cfs, $\frac{1.2\text{cfs}}{\text{sq.mi.}}$ | 12,700 cfs, $\frac{27\text{cfs}}{\text{sq.mi.}}$ | 32 cfs, $\frac{0.1\text{cfs}}{\text{sq.mi.}}$ |                          |

\* Cubic feet per second

\*\* Flow regulated by Buckhorn Lake beginning December, 1960.

\*\*\* Flow regulated by Buckhorn Lake since December, 1960, By Herrington Lake since November, 1925, and by a Hydroelectric plant at Lock 7.

\*\*\*\* Low flow contribution from main Lexington Town Branch Plant, 18 MGD (28 cfs).

NOTE: Data is taken from "Surface Water Records in Kentucky" by the United States Geological Survey. The 7-day/10-yr. low flow was taken from the waste load allocation produced as a component of the 303e River Basin Continuing Planning Process.

There are fifteen lakes (See Table H-5) located in this basin with a total combined volume of 286,000 acre feet and a total combined surface area of 6,530 acres. The only lakes considered in the Kentucky basin report are those whose volume is greater than 1,000 acre feet or have a surface area greater than 100 acres. Two of these lakes, Buckhorn Lake and Carr Fork Lake, are Federal installations with a combined volume of 28,000 acre feet. The Buckhorn Lake (22,000 acre feet) is regulated to meet flood, recreation, fish and wildlife and low flow augmentation objectives. The low flow augmentation objective aides the stream below the lake during periods of low flow by means of dilution and reaeration. The Carr Fork Lake (6,000 acre feet) has not been in operation long enough to determine its effects upon the stream below it.

#### E. Population

The total population in the basin is 534,400 with the rural population being 291,200 or 55 per cent of the total population. There are forty-two incorporated cities in the basin representing the remaining 243,200 people. The major concentration of population is in the inner bluegrass region in the adjoining counties of Fayette, Madison, Franklin, Scott and Woodford. These five counties represent 283,900 people or 53 per cent of the total population in the basin. (See Table H-6)



## Basin Water Quality

### A. Description of Sampling Stations

The water quality data presented in the next two sections of this report was collected at six sampling station. Three of these station are located on the main stem of the river at Lock 2 near Lockport, at Lock 4 near Frankfort and at the Lexington water treatment plant near I-75 in southern Fayette County. The other three stations are located on major tributaries thusly: North Fork of the Kentucky River at Hazard having 466 square miles above it, the station on the Red River having 180 square miles above it, the station on the main stem at Lexington having 4,015 square miles above it, the station on Eagle Creek at Glencoe having 430 square miles above it, and the station on the main stem at Lock 4 having 5,412 square miles above it. The summary of the raw water quality data is in Table H-9.

The station on the North Fork at Hazard was purposely chosen to represent water quality data in a coal mining area. The other four stations are more indicative of the general water quality in the Kentucky River Basin.

### B. General Chemical Water Quality

The chemical composition of water is best defined by grouping dissolved elements which compose the total dissolved solids, by examining the relationships of groups of chemicals, the type of water whether hard or soft, slaty, acid or high in sulfates reflects the mix of surface and groundwater. The chemical characteristics of a stream when viewed over a long period of time is primarily from surface water. The type of rock formation and soils which the surface water contacts causes this predominate chemical characteristic. The

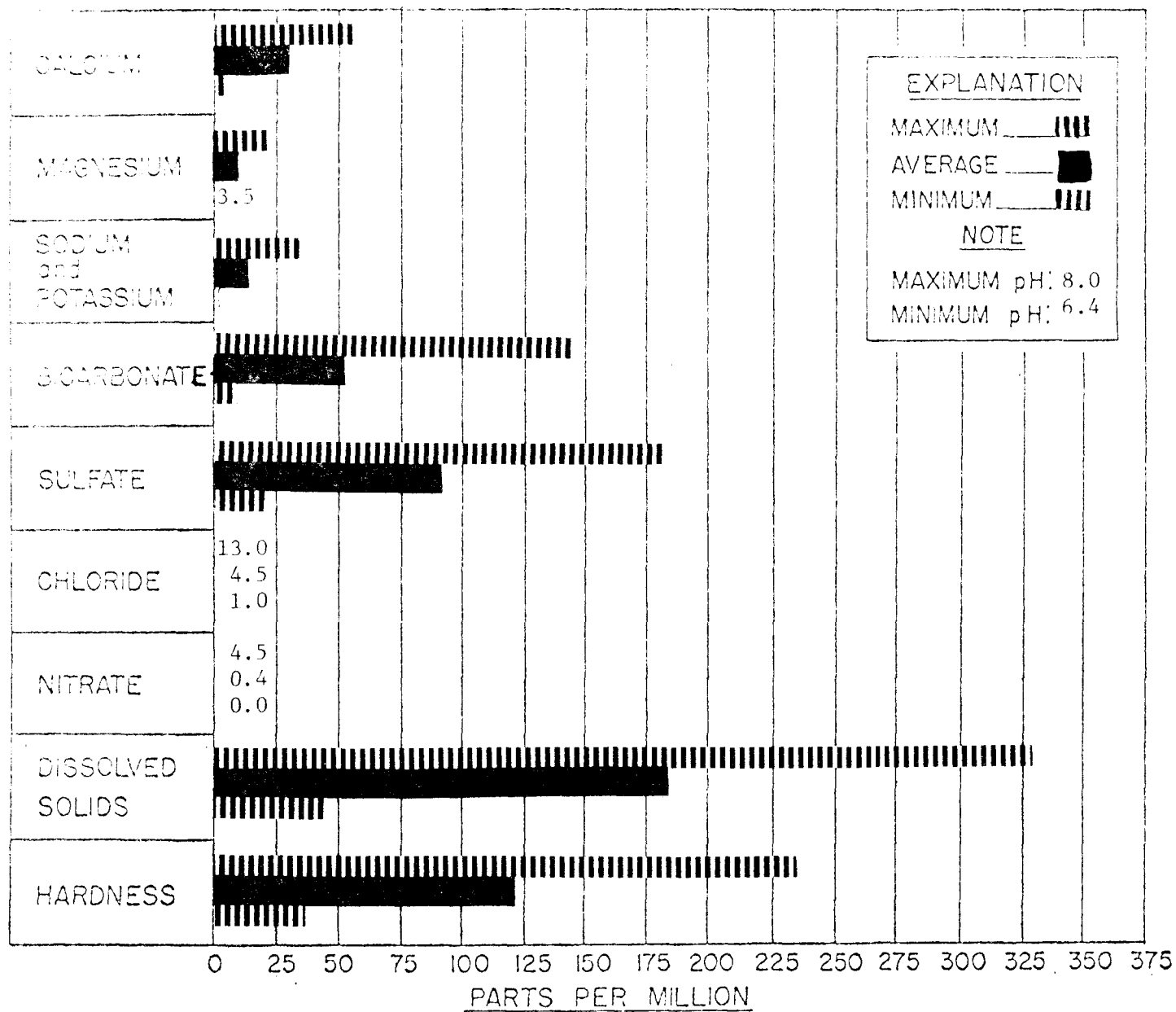
contribution of groundwater, which is generally higher in dissolved solids than surface water, can be shown by selecting the low flow period for data analyses. The general character of waters in Kentucky is one of moderate hardness caused by calcium and magnesium salts. The influence of mining activities are clearly indicated when the sulfate content increases to a high level than the bicarbonate content, and the pH is on the acid side, below pH 5.5.

Oil field operations, when brine is encountered, are reflected by changes in sodium and chloride contents of the water. For Kentucky water, the influence is pronounced when either chloride or sodium exceeds 20 - 25 parts per million as an average value.

The overall water quality for the Kentucky River Basin is represented by the station at Lock 4 near Frankfort, Eagle Creek at Glencoe and Red River at Pine Ridge demonstrate the water quality for sensitive streams. This means that water quality parameters have a wide range with respect to the average value.

Reference is made to Figures H-10, H-11 and H-12 which represent data for Eagle Creek at Glencoe for the period of 1-75 to 11-75, 2-73 to 11-74, and 1-62 to 11-74, respectively. Water Quality at Eagle Creek at Glencoe indicates that the water is very hard meaning that the calcium carbonate hardness is greater than 180 mg/l. Water in this sub-basin tends to be periodically acidic. The data indicates that the bicarbonate alkalinity is high providing a good inorganic load buffering capacity in this particular stream. The overall water quality in this sub-basin is good.

Relative to the Eagle Creek Basin, the water quality in the Red River at Pine Ridge has a higher quality as demonstrated by Figures H-4 and H-5. This is indicated by water characterized as soft (calcium carbonate hardness



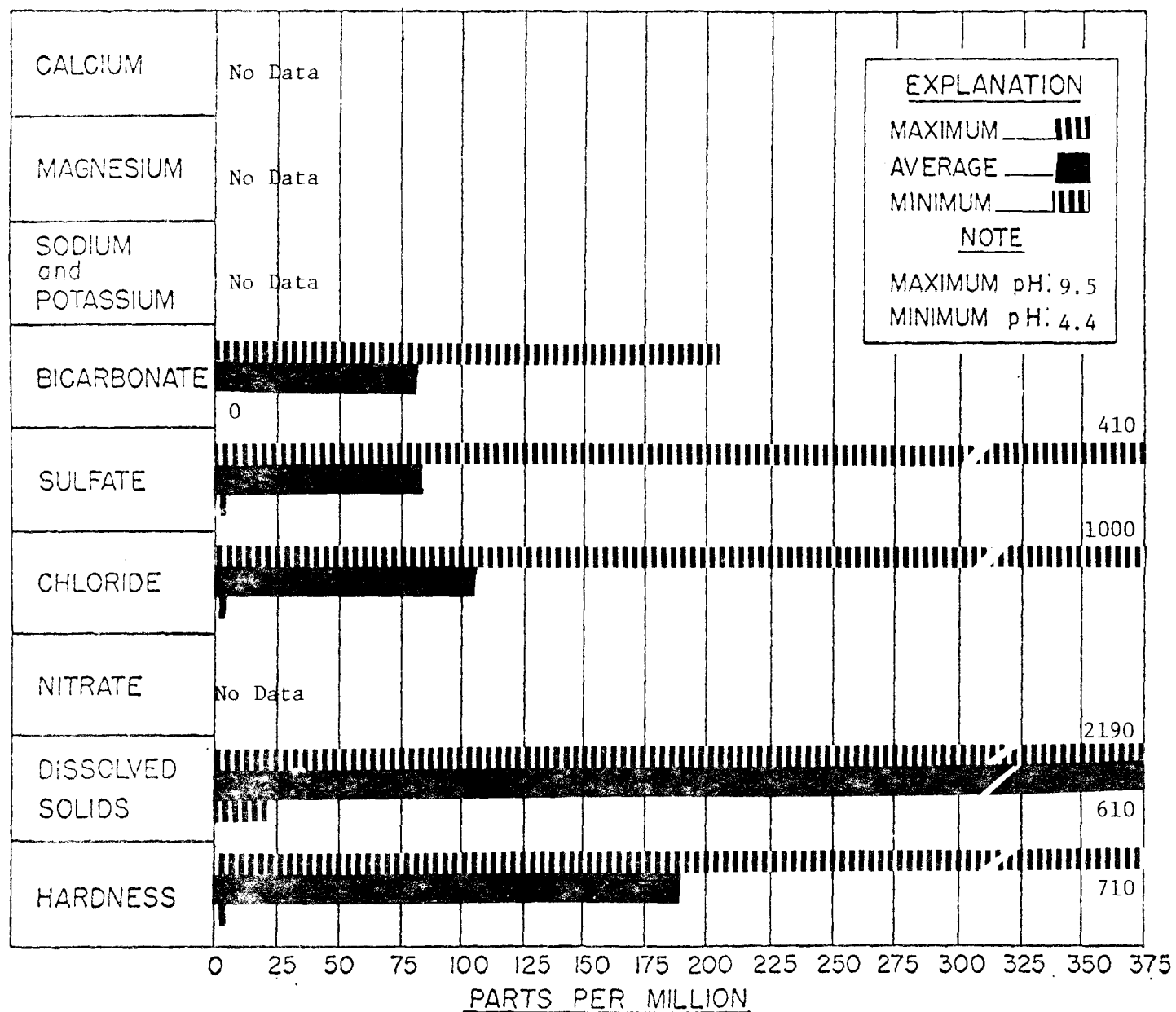
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents

FIGURE H-1

Carr Fork

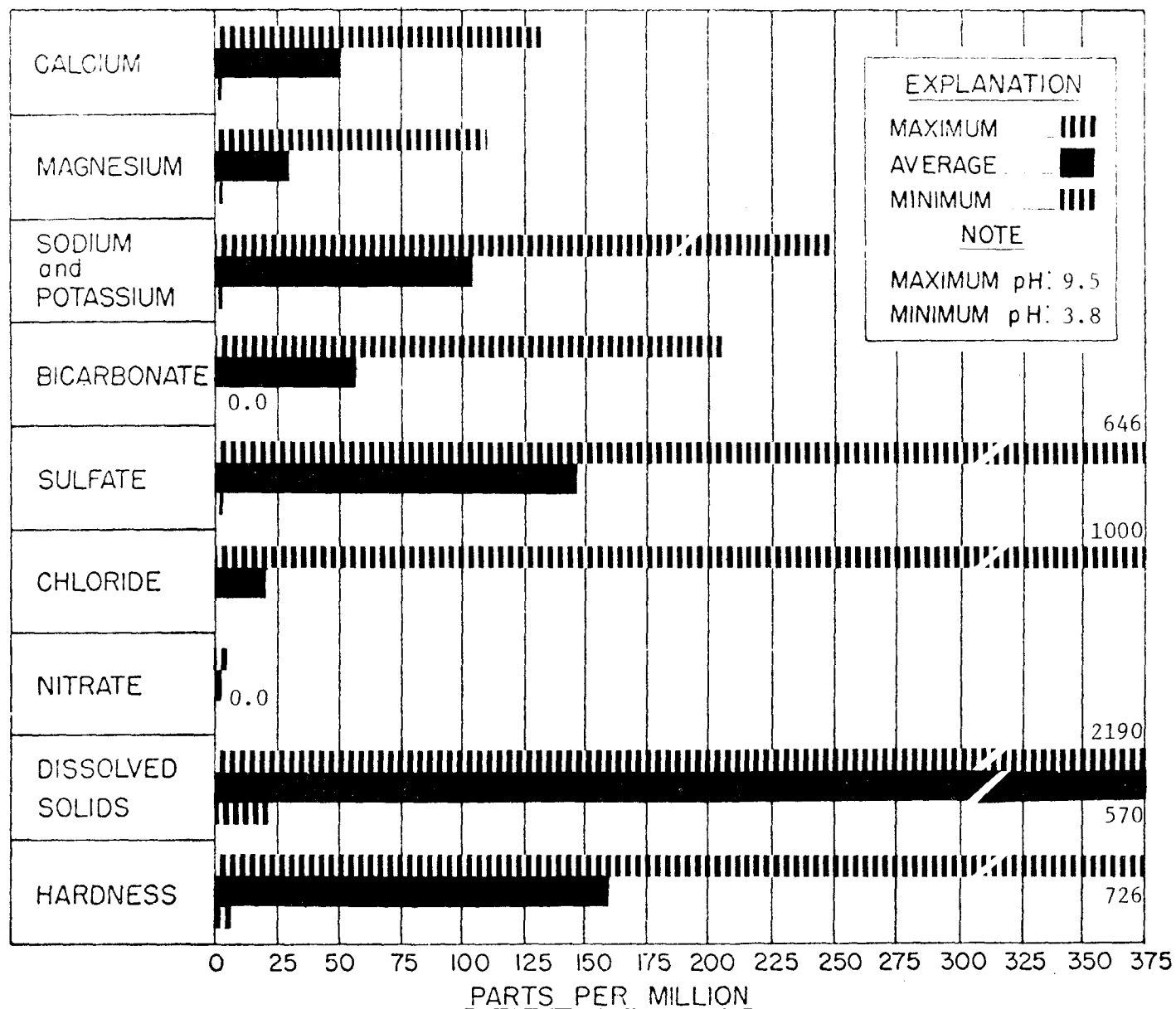
Sassafras

7-70 to 12-74



MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents

FIGURE H-2  
 North Fork Kentucky River  
 Hazard  
 1-73 to 6-74



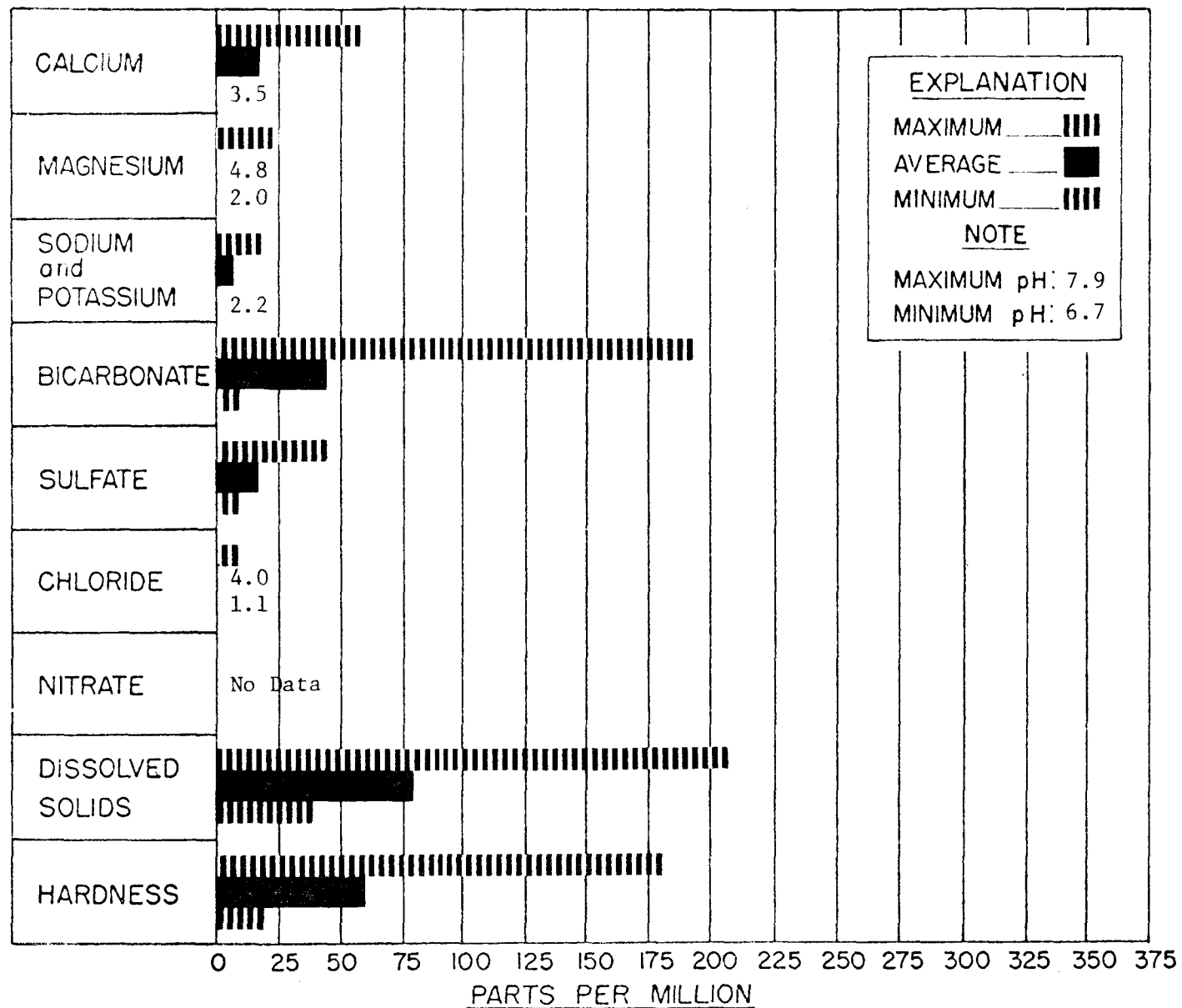
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,

FIGURE H-3

North Fork Kentucky River

Hazard

10-62 to 6-74



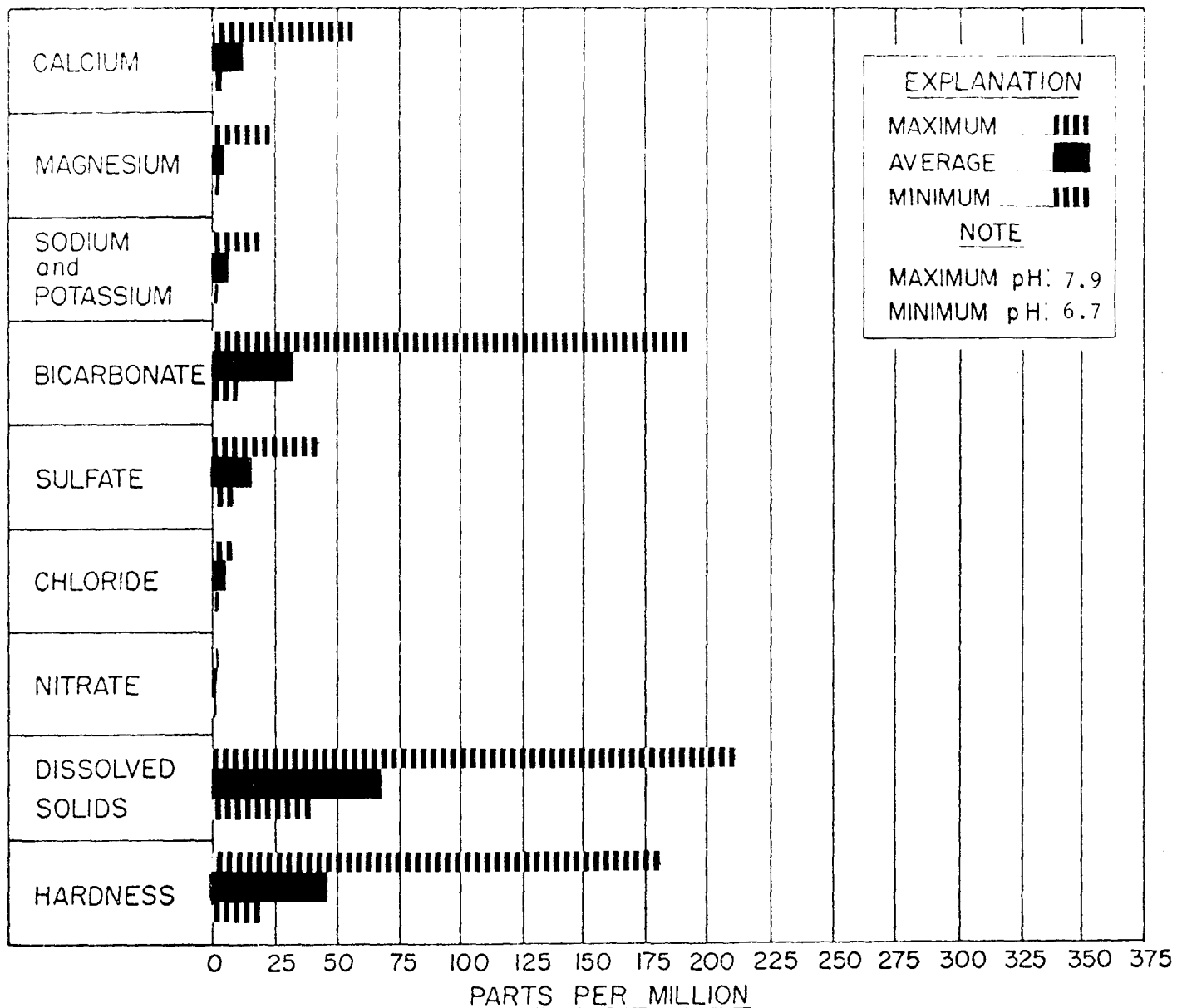
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,

FIGURE H-4

Red River

Pine Ridge

1-73 to 11-74



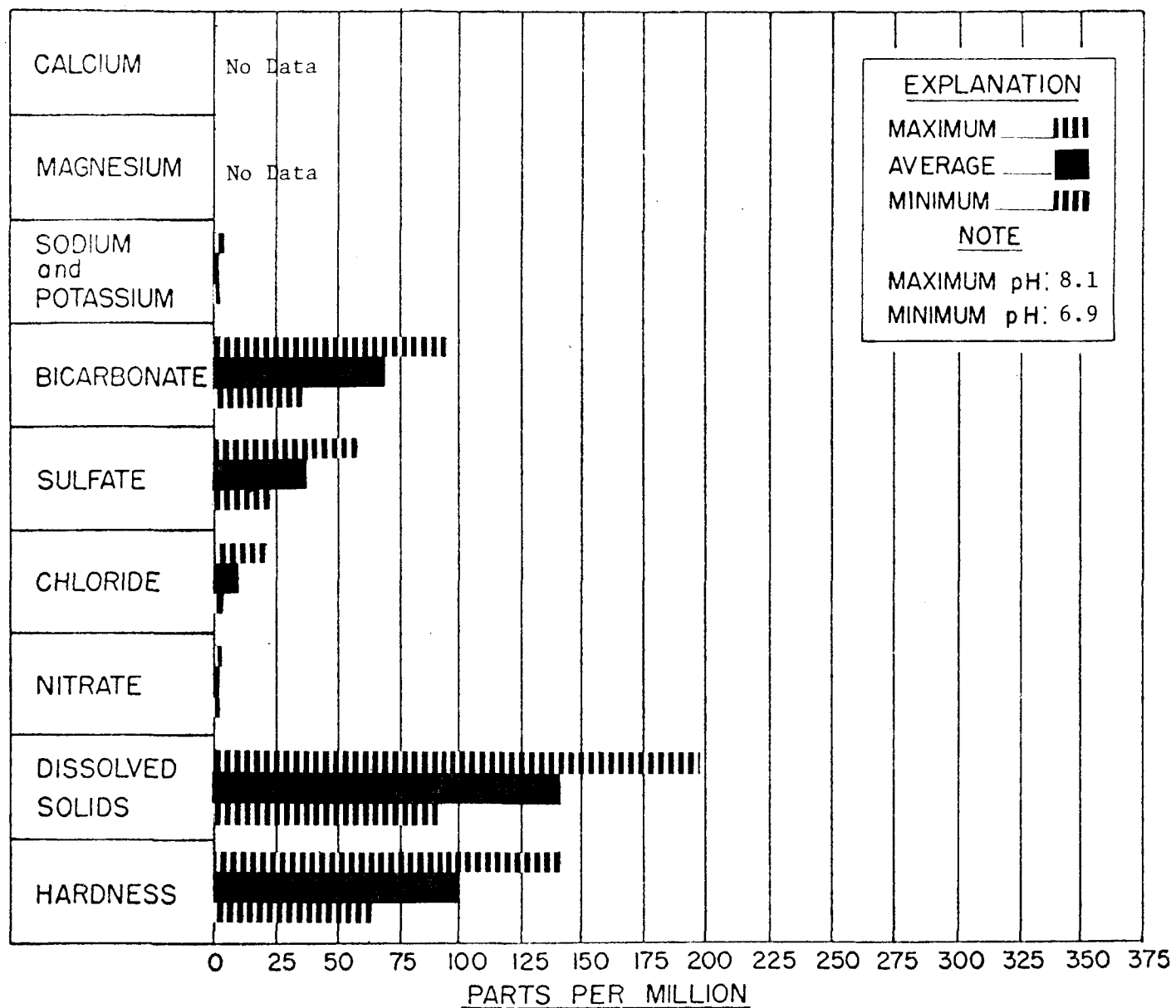
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,

FIGURE H-5

Red River

Pine Ridge

4-69 to 11-74



MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,

FIGURE H-6  
Kentucky River  
Lock 4 at Frankfort  
1-73 to 11-74



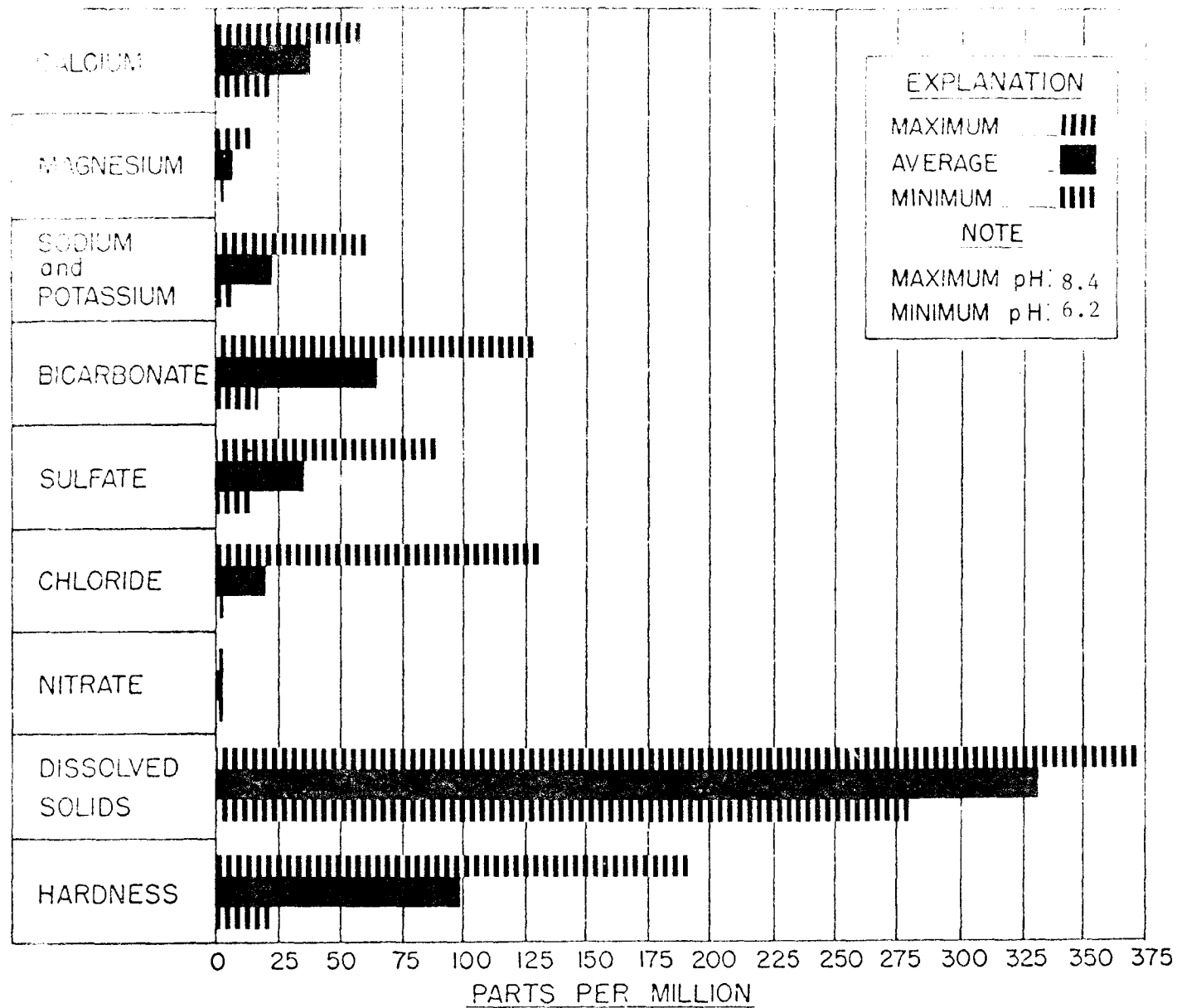


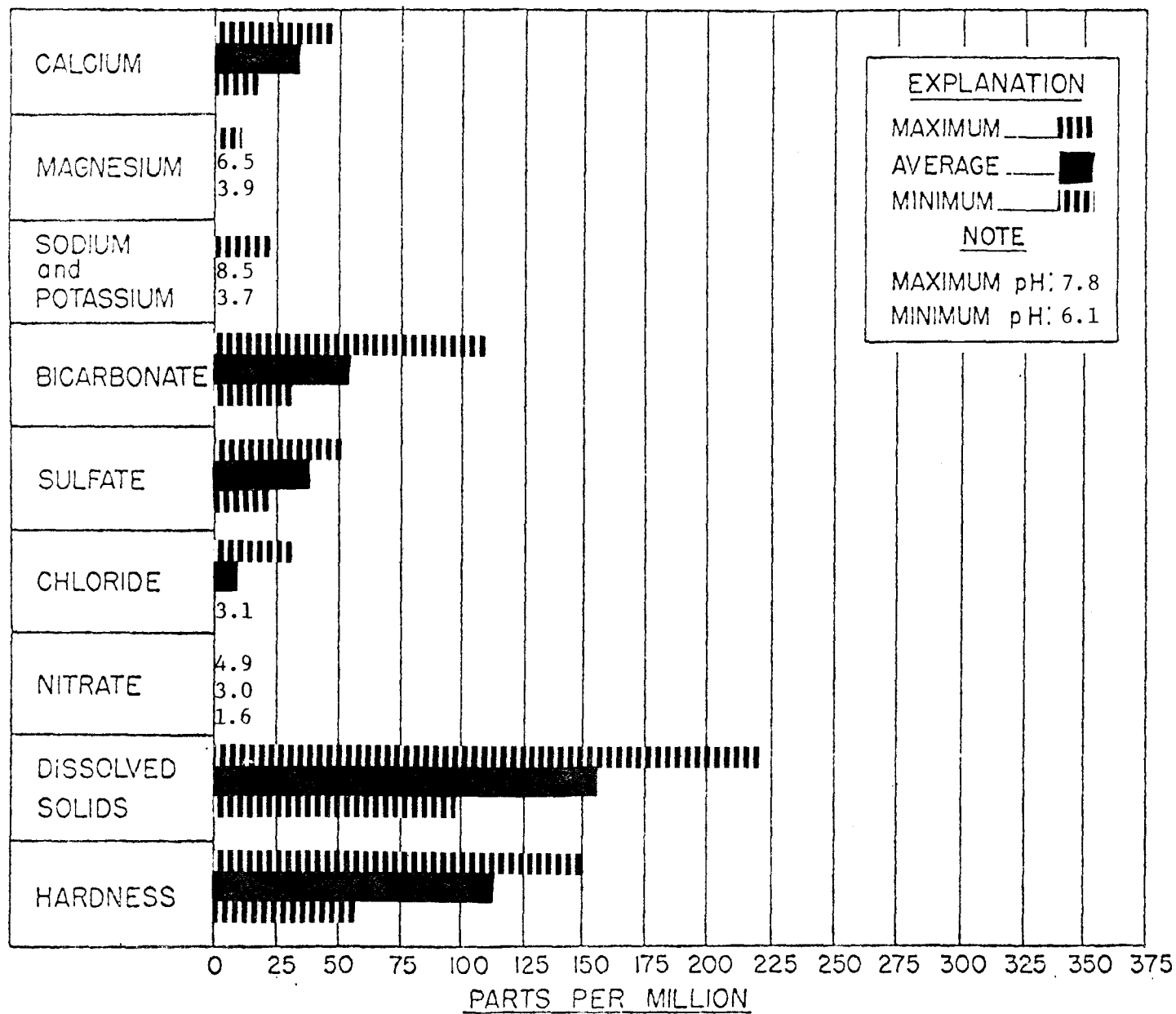
FIGURE H-7

Kentucky River

Lock 4 at Frankfort

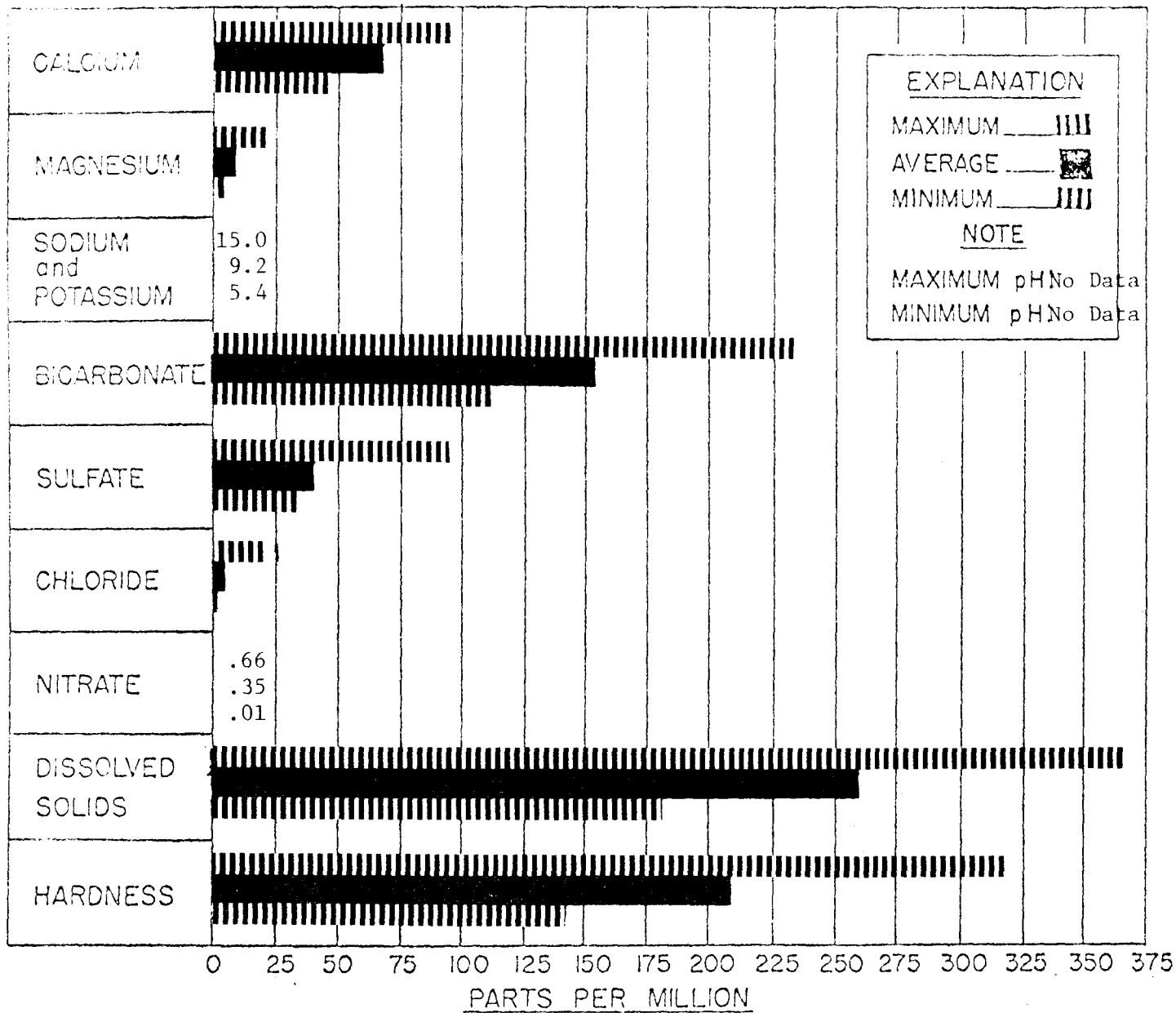
10-59 to 9-73

MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,



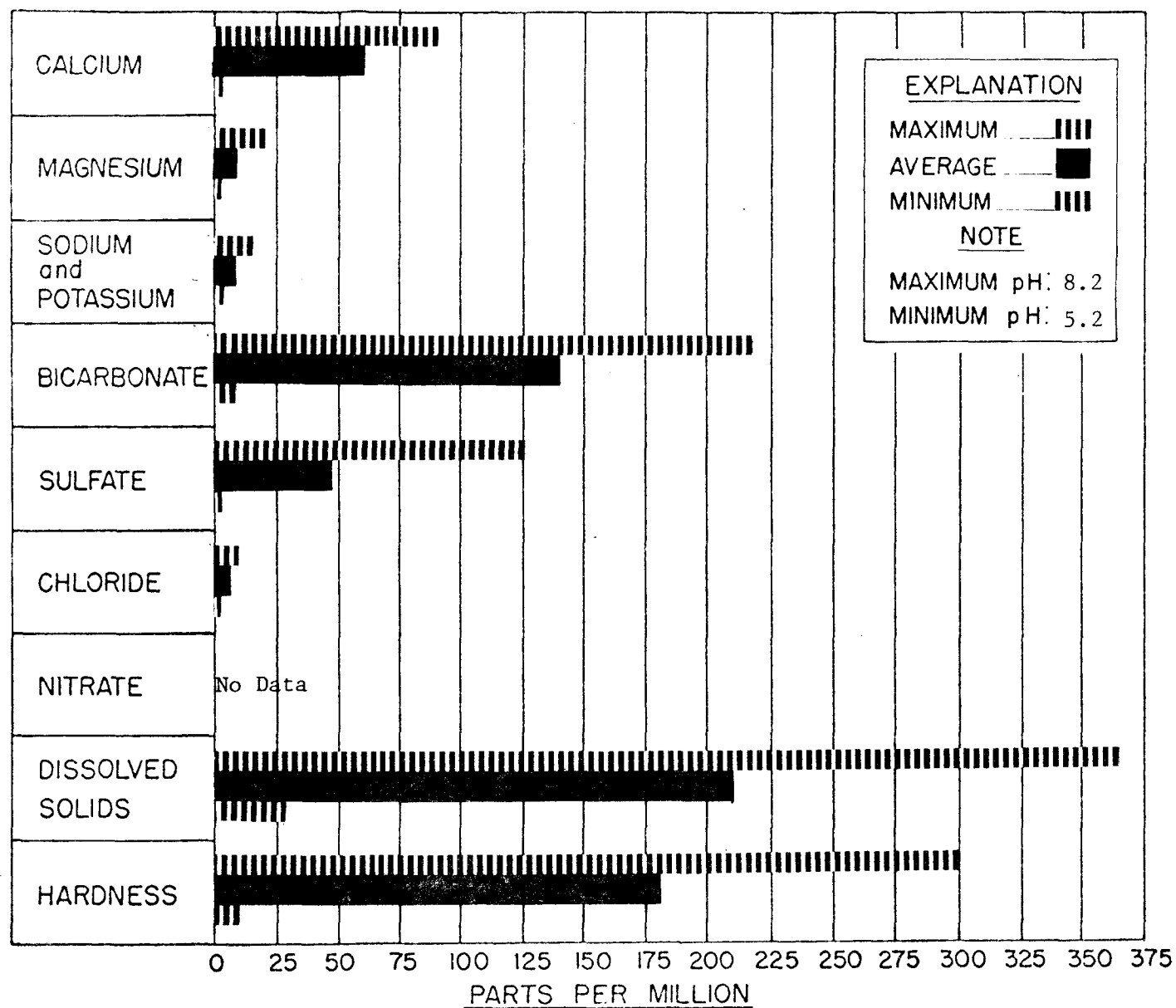
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents

FIGURE H-9  
 Kentucky River  
 Lock 2  
 2-73 to 1-76



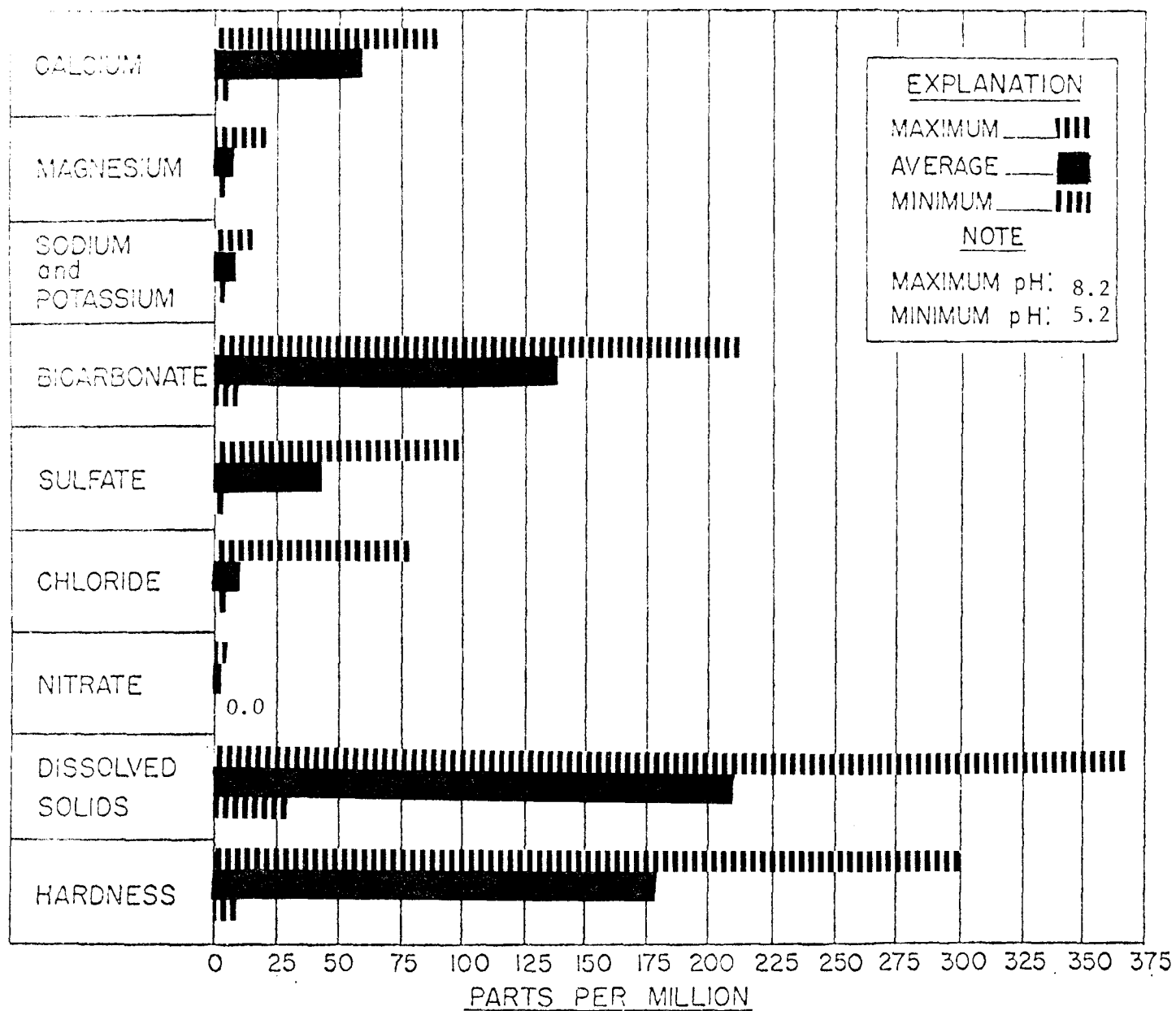
MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents

FIGURE H-10  
Eagle Creek  
Glencoe  
1-75 to 11-75



MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents,

FIGURE H-11  
 Eagle Creek  
 Glencoe  
 2-73 to 11-74



MAXIMUM, AVERAGE, and MINIMUM concentrations of dissolved constituents

FIGURE H-12

Eagle Creek

Glencoe

1-62 to 11-74

of less than 60 mg/l). The data studied indicates that the water in the Red River sub-basin is of the highest quality throughout the entire Kentucky River Basin.

The water quality of the main stem of the Kentucky River is demonstrated in Figures H-6 and H-7. This data was collected at Lock 4 near Frankfort and the river at this point is relatively insensitive due to its large drainage basin representation. This means that large influences are required to change the values measured in water quality. This data shows influences from upstream activities by an increase in dissolved solids and an increase in the hardness of the water. The hardness in the main stem is characterized as moderately hard (calcium bicarbonate hardness of 60 - 120 mg/l).

The North Fork of the Kentucky River at Hazard is just downstream of an intensive coal mining area and demonstrates the effects of such on water quality as can be seen in Figures H-2 and H-3. The North Fork is a relatively sensitive station showing a more rapid change in water quality. The water quality has been degraded by an increase in dissolved solids, hardness, sulfate, magnesium, calcium, sodium and potassium. The chloride levels are high as well as the sodium and potassium levels. This can be attributed to materials related to the coal mining industry. The acidity has increased as demonstrated by a decrease in pH. In general the water quality at this station is regarded as poor.

### C. Trace Chemical Water Quality

Trace elements (under 5 mg/l) are separated from the general chemical background of this report because of their influence on human health. Generally, these materials are "heavy" metals, which in sufficient concentrations have a toxic or otherwise adverse effect on human and animal or plant life. Levels for many of these elements have been established for years in the Drinking Water Standards and more recently through the State-Federal Water Quality Standards.

The trace elements measured in the Kentucky River Basin were less than the Kentucky/Federal Standards for Drinking water with the following exceptions. The station on the North Fork at Hazard yielded data that exceeded Kentucky/Federal Water Quality Standards in the parameters of iron, manganese, and lead. These parameters can be directly or indirectly related to coal mining activities. The standard for lead was surpassed three times at the Frankfort station and is under consideration for an intensive survey. The present analytical procedure is to be modified to yield the dissolved trace element values to reflect drinking water standards data.

#### D. Waste Load Effects on Water Quality

Within the confines of this report, water quality is considered as affected when the dissolved oxygen concentration drops below 5 mg/l. Approximately 868 miles of stream length were studied under a model used to determine waste load allocations, developed in the Kentucky Continuing Planning Process for River Basin Management Planning. According to this data, approximately 150 miles of that stream length would have a dissolved oxygen concentration of less than 5 mg/l when the flow is equal to or less than the 10 year 7 day low flow. This is highly possible as the flow of many of the tributaries does drop to or below, the 10 year 7 day low flow. It is not predicted that the dissolved oxygen concentration in any segment of the main stem of the river will drop below 5 mg/l.

Of the 150 miles of stream length affected, approximately 124 miles or 83 per cent will be due to municipalities, and 26 miles due to other dischargers such as subdivisions, trailer parks, schools, etc. The waste loads causing this effect totaled approximately 32 million gallons per day (mgd) of discharges with 30 million of it contributed by municipalities and the remaining two million by other discharges.

#### E. Non-Point Source Effects

Non-point source effects can be summarized in the three categories of agriculture, mining and surface runoff. It is estimated that approximately 1,070 square miles of disturbed forest land, cropland, and field gullies and some 1,700 miles of streambank and roadbank erode excessively and contribute to sediment in the streams. It is further estimated that over 54 square miles of surface mined land is exposed and has an excessive erosion rate.

Surface runoff from urban areas is also a problem in cases where sizable cities are located on low flow streams. There are three such cases in the Kentucky River Basin at the cities of Lexington, Richmond and Danville. This type of source exerts a load on the receiving stream with respect to Biochemical Oxygen Demand (BOD) and suspended solids.

#### F. Water Uses

The most important use of water is for public water supply. Over 51 million gallons per day is withdrawn for use in this basin. Of this amount, approximately 24 million gallons per day or 48 per cent is used for public supply. The remaining 27 million gallons per day is used for industry. It should be noted that 27 percent, or fourteen million gallons per day, of the total withdrawal is withdrawn from groundwater.

Another major use of water in this basin is for recreational purposes. There are numerous boat docks, camp sites, beaches and other recreational facilities located in the Kentucky River Basin. Furthermore, according to the Kentucky Department of Fish and Wildlife, there are over 2,000 miles of stream in this basin capable of providing a sport fishery with a grand total of 99 species of fishes representing 18 families.

Generally, water in the basin is widely used in the agricultural industry primarily for livestock watering with a small amount used for irrigation. The water in the basin is of sufficient quality for this use



except in areas of extensive coal mining, i.e., in the headwaters.

#### G. Water Quality Changes

In general, the quality of the water in the Kentucky River Basin is not changing according to the data studied. However, the data taken at the station on the North Fork of the Kentucky River at Hazard reveals that the quality of the water is deteriorating. The concentrations of no less than nine of the parameters studied have increased by considerable amounts. With the energy crisis demanding greater and greater amounts of coal, there is the potential for these problems to increase even more. Much care must be taken in this area to prevent the quality of the water from deteriorating as coal production increases and an effort must be made to upgrade the existing quality of the water.

### III. Summary

As stated earlier in this report, the quality of the water in the Kentucky River Basin is good at the station on the main stem of the river at Lock 4 near Frankfort, on the Red River at Pine Ridge and on Eagle Creek at Glencoe. However, the station on the North Fork of the Kentucky River at Hazard reflects the effects of coal mining on water quality.

The two main problems in the basin with regards to water quality are siltation and municipal organic wasteloads.

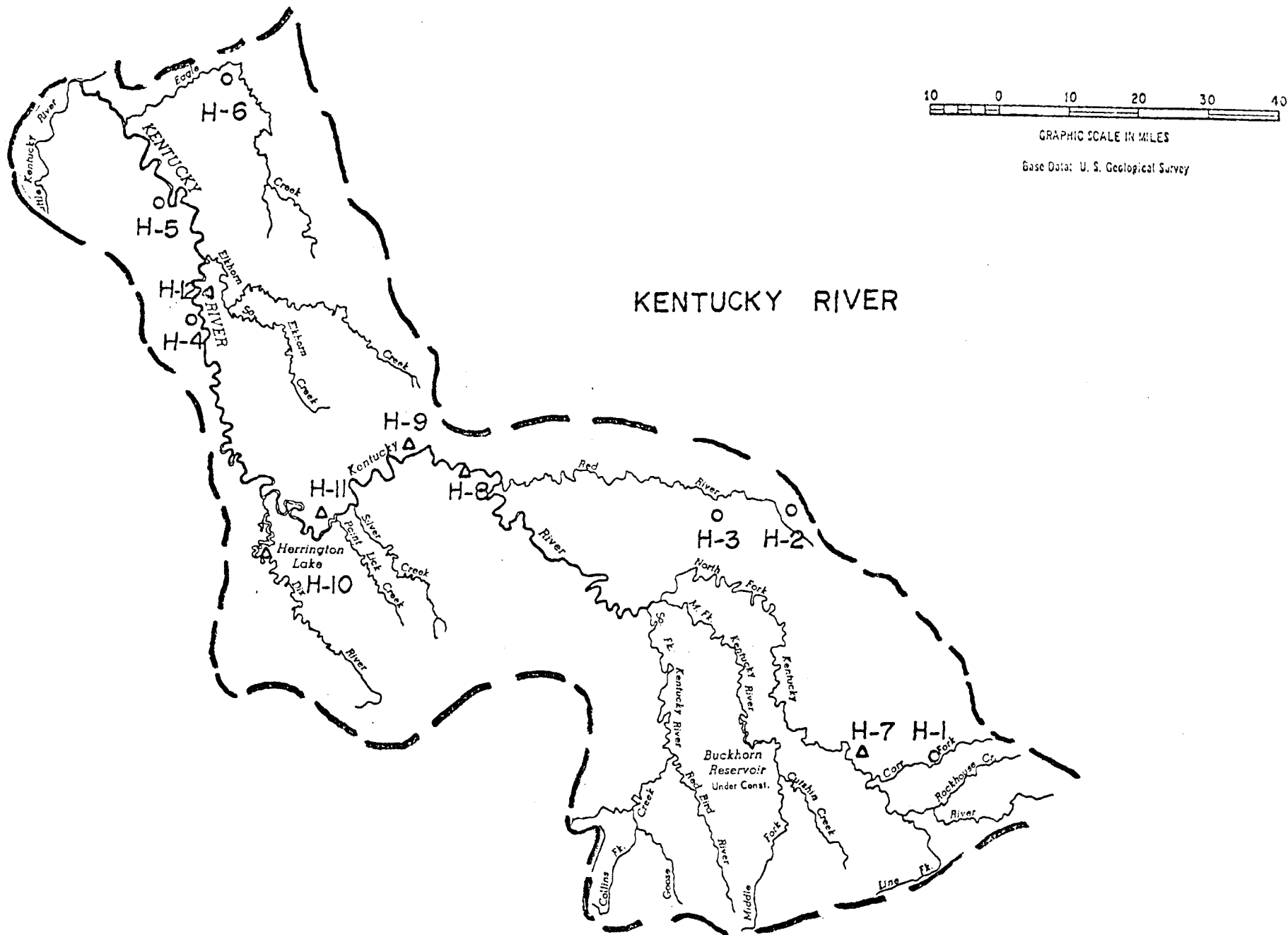
The problem of municipal organic wasteloads is twofold: Inadequate treatment facilities and improper operation of some existing treatment facilities. More emphasis should be placed on the training of wastewater treatment plant operators and recruiting of better qualified personnel to insure proper operation and maintenance of treatment facilities. According to the data, 38 per cent of the existing treatment facilities in this basin need improvements as they are affecting the quality of the water.

The siltation and organic load problems related to urban runoff from sizeable cities located on low-flow streams can be improved by the installation of upgrading of storm sewer systems.

The siltation problem related to coal production is localized in the headwaters. The coal producing counties that contribute to this basin are Bell, Clay, Estill, Harlan, Knott, Knox, Leslie, Letcher and Perry. The logging of forest land in preparation for strip mining can result in high runoff rates and serious erosion while the actual strip mining leads to sedimentation from upheaval of surface soil. With today's emphasis on increased coal production, this problem will have to be controlled to prevent further degradation of the

water quality. As shown earlier in this report, the quality of the water is already below acceptable standards in this area and measures for improvement need to be emphasized and implemented.

The water quality problems related to coal production cannot be over emphasized. The State of Kentucky is the largest coal producing state in the nation and its production level is predicted to triple within the next few years. This amount of coal mining activity could have a disasterous, practically irreversible effect on the quality of the waters of Kentucky.



## STATION KEY

H-1 CARR FORK NEAR SASSAFRAS  
H-2 RED RIVER NEAR HAZEL GREEN  
H-3 RED RIVER NEAR PINE RIDGE  
H-4 KENTUCKY RIVER AT LOCK 4  
H-5 KENTUCKY RIVER AT LOCK 2  
H-6 EAGLE CREEK AT GLENCOE  
H-7 NORTH FORK KENTUCKY RIVER AT HAZARD  
H-8 KENTUCKY RIVER AT RICHMOND  
H-9 KENTUCKY RIVER AT LEXINGTON W P I  
H-10 DIX RIVER AT DANVILLE W P I  
H-11 KENTUCKY RIVER AT LOCK 8  
H-12 KENTUCKY RIVER AT FRANKFORT W P I

TABLE H-1  
SUB-BASINS OF 200 SQUARE MILES OR GREATER IN  
THE KENTUCKY RIVER BASIN

| <u>Sub-basins</u>                             | <u>Square Miles</u> |
|---|---------------------|
| North Fork of Kentucky                        | 1,883.0             |
| South Fork of Kentucky                        | 748.0               |
| Middle Fork of Kentucky                       | 559.0               |
| Red River                                     | 487.00              |
| Dix River                                     | 442.0               |
| Elkhorn Creek (at lower Dam Site)<br>Mile 2.5 | 492.0               |
| Eagle Creek                                   | 519.0               |
| Station Cam Creek                             | 217.0               |

NOTE: This information is from the waste load allocation for Kentucky and is an output from the 303e River Basin Planning Effort.

TABLE H-2

## COUNTY AREA IN THE KENTUCKY RIVER BASIN

| County    | Total Area<br>(sq. miles) | Area in Basin<br>(sq. miles) | County     | Total Area<br>(sq. miles) | Area in Basin<br>(sq. miles) |
|-----------|---------------------------|------------------------------|------------|---------------------------|------------------------------|
| Anderson  | 206                       | 70                           | Lee        | 210                       | 210                          |
| Bell      | 370                       | 15                           | Leslie     | 409                       | 409                          |
| Boyle     | 183                       | 80                           | Letcher    | 339                       | 290                          |
| Breathitt | 494                       | 494                          | Lincoln    | 340                       | 187                          |
| Carroll   | 130                       | 86                           | Madison    | 446                       | 446                          |
| Clark     | 259                       | 130                          | Menifee    | 210                       | 65                           |
| Clay      | 474                       | 430                          | Mercer     | 256                       | 102                          |
| Estill    | 260                       | 260                          | Montgomery | 204                       | 35                           |
| Fayette   | 280                       | 280                          | Owen       | 351                       | 351                          |
| Franklin  | 211                       | 211                          | Owsley     | 197                       | 197                          |
| Garrard   | 236                       | 236                          | Perry      | 341                       | 341                          |
| Grant     | 249                       | 249                          | Powell     | 173                       | 173                          |
| Harlan    | 469                       | 70                           | Rockcastle | 311                       | 60                           |
| Henry     | 289                       | 260                          | Scott      | 284                       | 284                          |
| Jackson   | 337                       | 135                          | Shelby     | 383                       | 70                           |
| Jessamine | 177                       | 177                          | Trimble    | 146                       | 60                           |
| Knott     | 356                       | 255                          | Wolfe      | 227                       | 227                          |
| Knox      | 373                       | 38                           | Woodford   | <u>193</u>                | <u>193</u>                   |
| Total     |                           |                              |            |                           | 7,033                        |

SOURCE: Rand McNally Standard Reference Map  
and Guide of Kentucky, 1972.

TABLE H-3  
SLOPES AND ELEVATIONS OF PRINCIPAL TRIBUTARIES  
IN THE KENTUCKY RIVER BASIN

| STREAM                    | LENGTH<br>(Miles)                                    | Max. El.<br>(m.s.l.) | Min. El.<br>(m.s.l.) | AVERAGE SLOPE<br>(ft./miles) |
|---------------------------|--|----------------------|----------------------|------------------------------|
| N. Fork of Kentucky River | 148.1  | 1,109                | 634                  | 3.21                         |
| M. Fork of Kentucky River | 43.3   | 757                  | 627                  | 3.00                         |
| S. Fork of Kentucky River | 85.0   | 1,250                | 634                  | 7.25                         |
| Goose Creek               | 21.8   | 830                  | 754                  | 3.49                         |
| Troublesome Creek         | 42.4   | 1,004                | 720                  | 6.69                         |
| Red River                 | 59.5   | 713                  | 566                  | 2.47                         |
| Otter Creek               | 13.1   | 880                  | 566                  | 23.97                        |
| Boone Creek               | 7.2  | 780                  | 549                  | 32.08                        |
| Silver Creek              | 39.2   | 936                  | 531                  | 10.33                        |
| Paint Lick Creek          | 32.0   | 920                  | 531                  | 12.16                        |
| Hickman Creek             | 31.5   | 910                  | 514                  | 12.57                        |
| Jessamine Creek           | 13.1   | 860                  | 519                  | 26.03                        |
| Clarks Run Creek          | 10.4   | 920                  | 750                  | 16.35                        |
| Dix River                 |  |                      |                      |                              |
| H.W. to mp 34.6           | 23.2   | 822                  | 750                  | 3.27                         |
|                           | 0.0 slope from mp 34.60 to mouth including reservoir |                      |                      |                              |
| Glenns Creek              | 12.5   | 830                  | 469                  | 28.88                        |
| Elkhorn Creek             | 90.6   | 950                  | 454                  | 5.48                         |
| Drennon Creek             | 16.6   | 800                  | 428                  | 22.41                        |
| Stephens Creek            | 20.9   | 920                  | 598                  | 15.41                        |
| Clarks Creek              | 15.4   | 791                  | 586                  | 13.31                        |
| Eagle Creek               | 81.4   | 737                  | 428                  | 3.80                         |
| Little Eagle Creek        | 12.6   | 914                  | 737                  | 14.05                        |

NOTE: This information is from the waste load allocation for Kentucky and is an output from the 303e River Basin Planning Effort.



TABLE H-5

## LAKES IN THE KENTUCKY RIVER BASIN

| Location                             | County                | Surface Area<br>(Acres) | Capacity<br>Acre-Feet |
|--------------------------------------|-----------------------|-------------------------|-----------------------|
| Fishpond Lake                        | Letcher County        | 31                      | 1,037                 |
| Taylor Fork Lake                     | Madison County        | 169                     | 3,572                 |
| Corinth Lake                         | Grant County          | 96                      | 1,612                 |
| Bullock Pen                          | Grant County          | 134                     | 2,464                 |
| Elmer Davis Lake                     | Owen County           | 149                     | 3,151                 |
| Pan Bowl Lake                        | Jackson County        | 98                      | 1,298                 |
| Lexington Reservoirs                 | Fayette County        | 408                     | 3,850                 |
| Mill Creek Lake                      | Wolfe County          | 41                      | 1,049                 |
| Elk Lake                             | Owen County           | 207                     | 2,654                 |
| Herrington Lake                      | Mercer County         | 2,940                   | 230,500               |
| Kentucky Utility<br>Fly Ash Disposal | Carroll County        | 89                      | 2,491                 |
| Lake Vega                            | Madison County        | 132                     | 1,557                 |
| Boltz Lake                           | Grant County          | <u>92</u>               | <u>2,168</u>          |
| Total -----                          |                       | 4,586                   | 257,403               |
| <u>Federal</u>                       |                       |                         |                       |
| Buckhorn Lake                        | Leslie & Perry County | 1,230                   | 21,800                |
| Carr Fork Lake                       | Knott County          | <u>710</u>              | <u>6,480</u>          |
| Total -----                          |                       | 1,940                   | 28,280                |
| Grand Total -----                    |                       | 6,526                   | 285,683               |

SOURCE: Kentucky Department for Natural Resources and Environmental Protection, Division of Water Resources.

Table H-6

City Population and Facility Grant Status  
in the Kentucky River Basin in Kentucky

| County    | City  | Population       | Project<br>Type | Comments                    |
|-----------|---|------------------|-----------------|-----------------------------|
| Anderson  |   |                  |                 |                             |
| Bell      |   |                  |                 |                             |
| Boyle     | Danville<br>(Junction City)                   | 12,400<br>1,046  | 1               | Active                      |
| Breathitt | Jackson                                       | 1,887            | 1               | Active                      |
| Carroll   | Carrollton                                    | 3,884            | 1               | Active                      |
| Clark     |   |                  |                 |                             |
| Clay      | Manchester                                    | 1,664            | 1               | Active                      |
| Estill    | Irvine<br>(Ravenna)                           | 2,918<br>734     | 1               | Active                      |
| Fayette   | Lexington-Main<br>(Lexington-West<br>Hickman) | 73,500<br>43,500 | 1               | Active                      |
| Franklin  | Frankfort                                     | 22,700           | 1 & 2           | Active                      |
| Garrard   | Lancaster                                     | 3,230            | 1               | Active                      |
| Grant     | Williamstown<br>(Dry Ridge)                   | 2,063<br>1,100   | 1<br>2<br>3     | Active<br>Pending<br>Active |
| Harlan    |   |                  |                 |                             |
| Henry     | New Castle<br>Pleasureville                   | 755<br>747       | 1<br>1          | Active<br>Active            |
| Jackson   |   |                  |                 |                             |
| Jessamine | Nicholasville<br>Wilmore                      | 5,829<br>3,466   | 1<br>None       | Active<br>Sewers/STP        |
| Knott     | Hindman                                       | 808              | 1               | Active                      |
| Knox      |   |                  |                 |                             |
| Lee       | Beattyville                                   | 923              | 1               | Active                      |

Table H-6  
Continued

| County     | City                                     | Population | Project Type | Comments   |
|------------|--|------------|--------------|------------|
| Leslie     | Hyden                                    | 482        | None         | Sewers/STP |
| Letcher    | Whitesburg                               | 1,137      | 1            | Active     |
|            | Sanitation District #1<br>(Neon-Fleming) | 1,178      | 1 & 2        | Active     |
| Lincoln    | Stanford                                 | 2,474      | 1            | Active     |
|            | Crab Orchard                             | 861        | 1            | Active     |
|            | Hustonville                              | 413        | 1            | Active     |
| Madison    | Berea #1                                 | 4,600      | 1            | Active     |
|            | (Berea #2)                               | 2,300      |              |            |
|            | Richmond #1                              | 10,100     | 1            | Active     |
|            | (Richmond #2)                            | 7,700      | 2            | Pending    |
| Menifee    |  |            |              |            |
| Mercer     | (Burgin)                                 | 1,002      | 1            | Active     |
| Montgomery |  |            |              |            |
| Owen       | Owenton                                  | 1,280      | 1            | Active     |
| Owsley     | Booneville                               | 126        | None         | Sewers/STP |
| Perry      | Hazard                                   | 5,459      | 1            |            |
|            | (Sanitation District #1)                 |            |              |            |
|            | Vicco                                    | 377        | 1            | Active     |
| Powell     | Stanton                                  | 2,037      | 1            | Active     |
|            | (Clay City)                              | 983        |              |            |
| Rockcastle | Brodhead                                 | 769        | None         | Sewers/STP |
| Scott      | Georgetown                               | 8,629      | 1            | Underway   |
|            | Stamping Ground                          | 411        | 3            | Active     |
|            | Sadieville                               | 272        | None         | No Sewers  |
| Shelby     |  |            |              |            |
| Trimble    |  |            |              |            |

Table H-6  
Continued

| County   | City               | Population | Project Type | Comments |
|----------|--------------------|------------|--------------|----------|
| Wolfe    | Campton            | 419        | 1            | Active   |
|          | Wolfe County W. D. | 200        | 1            | Active   |
| Woodford | Versailles         | 5,679      | 1            | Active   |
|          | Midway             | 1,278      | 1            | Active   |

NOTE: Project type is related to the grant process step applied for or active for each municipality. Step 1 is the preliminary studies (201 Facilities Plan) required before design of the facilities. Step 2 is the design phase of the project, and Step 3 is the construction of facilities for the collection and treatment of wastewaters.

The comments relate to the status of the grant. Active indicates the project is funded and underway. Pending indicates that application for a grant has been made and is pending approval. No sewers indicates that the municipality does not presently have a comprehensive sewer system. Sewers/STP indicates the municipality is now served by sewers and treatment facilities.

The source of this information was the 1970 U. S. Census and the FY 77 construction grants list for Kentucky.

TABLE H-7

Organic Loads Affecting Streams in the Kentucky River Basin

|  |     |
|--|-----|
| Length of streams to which treated organic loads are discharged  | 868 |
| Stream length for which dissolved oxygen is predicted to be below 5 mg/l during periods of low flow        | 145 |
| Stream length for which dissolved oxygen is predicted to be below 5 mg/l during periods of low flow due to |     |
| Municipal Discharges   | 119 |
| Industrial Discharges  | --- |
| Other Discharges   | 26  |

NOTE: This information is from the waste load allocation for Kentucky and is an output from the 303e river basin planning effort. The values indicated the stream miles in which the dissolved oxygen is predicted to be less than 5 mg.l when the stream flow is less than the once in ten year, seven day, low flow.

Table H-8

## LOCKS AND DAMS ON THE KENTUCKY RIVER

| Lock<br>No. | Miles<br>Above Mouth | Length of Pool<br>Above Dam (miles) |
|-------------|----------------------|-------------------------------------|
| 1           | 4.0                  | 27.0                                |
| 2           | 31.0                 | 11.0                                |
| 3           | 42.0                 | 23.0                                |
| 4           | 65.0                 | 17.2                                |
| 5           | 82.2                 | 14.0                                |
| 6           | 96.2                 | 20.8                                |
| 7           | 117.0                | 22.9                                |
| 8           | 139.9                | 17.6                                |
| 9           | 157.5                | 18.9                                |
| 10          | 176.4                | 24.6                                |
| 11          | 201.0                | 19.9                                |
| 12          | 220.9                | 19.0                                |
| 13          | 239.9                | 9.1                                 |
| 14          | 249.0                | -                                   |

Navigation Charts  
U. S. Army Corps of Engineers  
Louisville District

Table H-9

## Water Quality Data for the Kentucky River Basin

| Station                                       | Beg.<br>Date  | End<br>Date | Mean                           | Max.  | Min.  | #OBS. | S     |
|---|---|-------------|--------------------------------|-------|-------|-------|-------|
| STORET #00400                                 | pH Specific Units                                       |             | Kentucky Standard 6-LT pH LT 9 |       |       |       |       |
| Carr Fork near Saasafras<br>U.S.G.S. 03277450 | 70/07/07  | 74/07/16    | 7.18                           | 8.0   | 6.4   | 33    | .360  |
| North Fork Kentucky<br>River at Hazard        | 75/01/16  | 75/01/16    | 7.4                            |       |       | 1     |       |
| U.S.G.S. 0327750                              | 70/01/31  | 74/06/11    | 7.4                            | 8.2   | 6.2   | 91    | .413  |
|   | 65/01/07  | 75/01/16    | 7.3                            | 8.2   | 3.8   | 210   | .530  |
|   | 62/01/08  | 74/06/--    | 7.2                            | 9.5   | 3.8   | 276   | 0.7   |
| Red River near<br>Hazel Green                 |   |             |                                |       |       |       |       |
| U.S.G.S. 03282500                             | 70/10/02  | 72/09/12    | 7.1                            | 7.3   | 6.8   | 3     | .289  |
| Red River near<br>Pine Ridge                  | 71/01/13  | 74/07/08    | 7.1                            | 7.8   | 6.7   | 33    | .237  |
| U.S.G.S. 03283100                             | 69/08/08  | 70/11/04    | 7.3                            | 7.7   | 6.7   | 13    | .326  |
|   | 69/03/20  | 69/03/05    | 7.5                            | 7.5   | 7.5   | 2     | .00   |
| Kentucky River Lock 4<br>U.S.G.S. 03287500    | 70/01/02  | 73/09/26    | 7.6                            | 8.1   | 6.8   | 92    | .308  |
|   | 65/01/13  | 73/09/26    | 7.5                            | 8.4   | 6.7   | 208   | .334  |
|   | 59/10/25  | 73/09/26    | 7.5                            | 8.4   | 5.2   | 206   | .370  |
| Kentucky River Lock 2<br>U.S.G.S. 03290500    | 76/01/07  | 76/11/02    | 6.79                           | 7.5   | 6.1   | 11    | 0.461 |
|   | 73/02/07  | 76/11/02    | 7.1                            | 7.8   | 6.1   | 40    | 0.466 |
| Eagle Creek at Glencoe<br>U.S.G.S. 03291500   | 75/07/14  | 75/07/14    | 7.7                            |       |       | 1     |       |
|   | 70/08/06  | 74/10/07    | 7.6                            | 8.1   | 7.0   | 39    | .267  |
|   | 62/01/25  | 74/10/07    | 7.6                            | 8.1   | 7.0   | 41    | .263  |
| STORET #00095                                 | Conductivity Micromhos, Kentucky Standard 800 micromhos |             |                                |       |       |       |       |
| Carr Fork near<br>Sassafras                   | 76/01/28  | 76/09/02    | 269.2                          | 354.0 | 215.0 | 6     | 57.0  |
|   | 70/07/07  | 76/09/02    | 294.2                          | 554.0 | 84.0  | 56    | 100.4 |
| North Fork Kentucky<br>River at Hazard        | 75/01/16  | 75/01/16    | 271.0                          |       |       | 1     |       |
|   | 70/01/31  | 74/06/11    | 392.4                          | 946.0 | 100.0 | 93    | 197.5 |
|   | 62/10/08  | 74/06/11    | 7.2                            | 8.2   | 3.8   | 264   | .599  |
| Red River near<br>Hazel Green                 | 76/01/16  | 76/08/17    | 82.5                           | 120.0 | 60.0  | 4     | 26.29 |
|   | 70/10/02  | 76/08/17    | 109.28                         | 157.0 | 60.0  | 7     | 39.42 |
| Red River near<br>Pine Ridge                  | 76/01/16  | 76/08/17    | 75.0                           | 100.0 | 65.0  | 5     | 14.57 |
|   | 68/11/21  | 76/08/17    | 97.34                          | 160.0 | 57.99 | 72    | 27.52 |

Table H-9  
Continued

| Station                                | Beg.<br>Date  | End<br>Date | Mean   | Max.   | Min.  | #OBS. | S     |
|--|---|-------------|--------|--------|-------|-------|-------|
| Kentucky River Lock 4                  | 75/03/14  | 75/03/14    | 210.0  |        |       | 1     |       |
|  | 70/01/02  | 74/08/26    | 258.1  | 646.0  | 115.0 | 96    | 98.3  |
|  | 65/01/13  | 74/08/26    | 265.4  | 675.0  | 115.0 | 222   | 104.4 |
|  | 59/10/03  | 74/08/26    | 253.0  | 675.0  | 76.0  | 388   | 94.9  |
| Kentucky River Lock 2                  | 76/01/07  | 76/12/01    | 254.2  | 320.0  | 195.0 | 12    | 39.01 |
|  | 73/02/07  | 76/12/01    | 246.77 | 336.0  | 123.0 | 45    | 38.29 |
| Eagle Creek at Glencoe                 | 75/01/30  | 75/11/07    | 436.0  | 160.0  | 10.0  | 7     | 101.5 |
|  | 70/08/06  | 74/12/09    | 365.8  | 617.0  | 204.0 | 48    | 85.6  |
|  | 70/08/06  | 74/12/09    | 365.8  | 617.0  | 204.0 | 48    | 85.6  |
|  | 62/01/25  | 74/12/09    | 361.2  | 617.0  | 204.0 | 50    | 86.8  |
| STORET #70300                          | Dissolved Solids Milligrams/liter KY. Std. 500 mg/l |             |        |        |       |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28  | 76/09/02    | 163.5  | 226.0  | 114.0 | 6     | 45.3  |
|  | 70/07/07  | 76/09/02    | 187.4  | 326.0  | 48.0  | 56    | 63.4  |
| North Fork Kentucky<br>River at Hazard | 70/01/31  | 74/06/11    | 259.3  | 676.0  | 58.0  | 91    | 141.1 |
|  | 65/01/07  | 74/06/11    | 267.9  | 810.0  | 58.0  | 219   | 147.5 |
|  | 62/10/08  | 74/06/11    | 290.8  | 1800.0 | 58.0  | 294   | 188.7 |
| Red River near<br>Hazel Green          | 70/10/02  | 72/09/12    | 90.0   | 100.0  | 74.0  | 3     | 14.0  |
| Red River near<br>Pine Ridge           | 76/01/16  | 76/08/17    | 46.6   | 52.0   | 36.0  | 5     | 6.69  |
|  | 69/03/20  | 76/08/17    | 62.01  | 95.9   | 30.0  | 71    | 16.1  |
| Kentucky River Lock 4                  | 70/01/02  | 73/09/26    | 158.5  | 400.0  | 54.0  | 92    | 60.5  |
|  | 65/01/13  | 73/09/26    | 162.6  | 400.0  | 54.0  | 218   | 62.8  |
|  | 59/10/03  | 73/09/26    | 150.2  | 400.0  | 8.2   | 414   | 55.5  |
| Kentucky River Lock 2                  | 76/01/07  | 76/11/02    | 149.8  | 169.0  | 128.0 | 11    | 14.39 |
|  | 73/02/07  | 76/11/02    | 154.47 | 220.0  | 96.0  | 47    | 23.41 |
| Eagle Creek at Glencoe                 | 75/01/30  | 75/12/18    | 260.0  | 368.0  | 184.0 | 7     | 63.6  |
|  | 70/08/06  | 74/12/09    | 231.6  | 385.0  | 136.0 | 48    | 54.6  |
|  | 70/08/06  | 74/12/09    | 231.6  | 385.0  | 136.0 | 48    | 54.6  |
|  | 62/01/25  | 74/12/09    | 229.0  | 385.0  | 136.0 | 50    | 55.0  |
| STORET #00410                          | Alkalinity mg/l No Standard                         |             |        |        |       |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28  | 76/09/02    | 50.3   | 94.0   | 25.0  | 6     | 27.1  |
|  | 70/07/07  | 76/09/02    | 54.7   | 201.0  | 11.0  | 56    | 38.1  |



Table H-9  
Continued

| Station                              | Beg.<br>Date  | End<br>Date | Mean  | Max.   | Min.  | #OBS. | S     |
|--------------------------------------|---|-------------|-------|--------|-------|-------|-------|
| North Fork Kentucky<br>Hazard        | 75/01/16  | 75/01/16    | 43.0  |        |       | 1     |       |
|                                      | 70/01/31  | 74/06/11    | 52.0  | 125.0  | 8.0   | 91    | 29.4  |
|                                      | 62/12/20  | 74/06/11    | 49.2  | 125.0  | .00   | 170   | 38.6  |
|                                      | 65/01/07  | 74/06/--    | 55.0  | 205.0  | 0.0   | 177   | 42.0  |
| Red River near<br>Hazel Green        | 70/10/02  | 72/09/12    | 43.7  | 54.0   | 34.0  | 3     | 10.01 |
| Red River near<br>Pine Ridge         | 76/01/16  | 76/08/17    | 16.6  | 25.0   | 11.0  | 5     | 5.4   |
|                                      | 69/03/20  | 76/08/17    | 26.6  | 54.0   | 9.0   | 71    | 12.45 |
| Kentucky River Lock 4                | 70/01/02  | 73/09/26    | 65.4  | 156.0  | 28.0  | 92    | 20.5  |
|                                      | 65/01/13  | 73/09/26    | 65.4  | 156.0  | 28.0  | 166   | 18.8  |
|                                      | 59/10/25  | 73/09/26    | 65.0  | 156.0  | 16.0  | 229   | 20.0  |
| Kentucky River Lock 2                | 76/01/07  | 76/11/02    | 71.64 | 83.0   | 57.0  | 11    | 7.32  |
|                                      | 73/02/07  | 76/11/02    | 76.66 | 110.0  | 28.0  | 47    | 14.57 |
| Eagle Creek at<br>Glencoe            | 75/01/30  | 75/12/18    | 153.1 | 232.0  | 112.0 | 9     | 38.5  |
|                                      | 70/08/06  | 74/12/09    | 142.5 | 217.0  | 78.0  | 48    | 32.5  |
| STORET #00900                        | Hardness mg/l, 0-60 Soft, 61-120 moderately hard,<br>121-180 hard, over 180 very hard |             |       |        |       |       |       |
| Carr Fork near<br>Sassafras          | 76/01/28  | 76/09/02    | 106.7 | 140.0  | 81.0  | 6     | 21.5  |
|                                      | 70/07/07  | 76/09/02    | 120.6 | 233.0  | 36.0  | 56    | 40.6  |
| North Fork Kentucky<br>River, Hazard | 70/01/31  | 73/09/15    | 148.5 | 370.0  | 12.0  | 90    | 78.9  |
|                                      | 65/01/07  | 73/09/15    | 148.2 | 422.0  | 12.0  | 208   | 79.1  |
|                                      | 62/10/08  | 73/09/15    | 157.9 | 1090.0 | 12.0  | 257   | 107.2 |
| Red River near<br>Hazel Green        | 70/10/02  | 72/09/12    | 59.0  | 71.0   | 48.0  | 3     | 11.5  |
| Red River near<br>Pine Ridge         | 76/01/16  | 76/08/17    | 28.4  | 36.0   | 24.0  | 5     | 4.62  |
|                                      | 69/03/20  | 76/08/17    | 38.68 | 62.0   | 18.0  | 70    | 11.83 |
| Kentucky River Lock 4                | 70/01/02  | 73/09/26    | 104.5 | 190.0  | 49.0  | 92    | 31.7  |
|                                      | 65/01/13  | 73/09/26    | 104.7 | 192.0  | 48.0  | 208   | 30.8  |
|                                      | 59/10/03  | 73/09/26    | 99.2  | 192.0  | 21.0  | 381   | 28.9  |

Table H-9  
Continued

| Station                                | Beg.<br>Date   | End<br>Date | Mean   | Max.   | Min.  | #OBS. | S     |
|--|--|-------------|--------|--------|-------|-------|-------|
| Kentucky River Lock 2                  | 76/01/07   | 76/11/02    | 109.3  | 120.0  | 93.0  | 11    | 8.97  |
|  | 73/02/07   | 76/11/02    | 111.62 | 150.0  | 56.0  | 47    | 15.72 |
| Eagle Creek at<br>Glencoe              | 75/01/30   | 75/12/18    | 208.9  | 320.0  | 140.0 | 9     | 54.4  |
|  | 70/08/06   | 74/12/09    | 185.0  | 300.0  | 94.0  | 48    | 47.1  |
|  | 62/01/25   | 74/12/09    | 182.4  | 300.0  | 94.0  | 50    | 47.8  |
| STORET #00080                          | Color Platinum - Cobalt Units, Prop. EPA Std. 75 Units |             |        |        |       |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28   | 76/09/02    | 54.2   | 140.0  | 0.0   | 6     | 63.3  |
|  | 70/07/07   | 76/09/02    | 69.1   | 1200.0 | 0.0   | 55    | 186.8 |
| North Fork Kentucky<br>River at Hazard | 70/11/03   | 72/10/15    | 8.3    | 15.0   | .00   | 3     | 7.6   |
|  | 65/01/07   | 72/10/15    | 8.2    | 50.0   | .00   | 68    | 9.0   |
|  | 62/10/08   | 72/10/15    | 7.9    | 50.0   | .00   | 117   | 8.4   |
| Red River near<br>Pine Ridge           | 76/01/16   | 76/08/17    | 14.0   | 25.0   | 5.0   | 5     | 8.22  |
|  | 69/03/20   | 76/08/17    | 14.6   | 70.0   | 0.0   | 68    | 12.83 |
| Kentucky River Lock 4                  | 70/10/07   | 72/10/21    | 6.6    | 10.0   | .00   | 3     | 5.8   |
|  | 65/01/13   | 72/10/21    | 8.0    | 50.0   | .00   | 65    | 8.2   |
|  | 59/10/25   | 72/10/21    | 8.9    | 50.0   | .00   | 138   | 7.8   |
| Eagle Creek at<br>Glencoe              | 75/01/30   | 75/12/18    | 47.9   | 160.0  | 10.0  | 9     | 48.6  |
|  | 70/08/06   | 74/12/09    | 49.2   | 300.0  | 5.0   | 45    | 52.8  |
|  | 62/01/25   | 74/12/09    | 48.5   | 300.0  | 5.0   | 47    | 51.7  |
| STORET #00930                          | Sodium mg/l, No Standard                               |             |        |        |       |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28   | 76/09/02    | 10.0   | 15.0   | 5.4   | 6     | 4.1   |
|  | 70/07/07   | 76/09/02    | 10.7   | 52.0   | 1.6   | 56    | 8.4   |
| North Fork Kentucky<br>River at Hazard | 70/11/03   | 72/10/15    | 38.0   | 56.0   | 26.0  | 3     | 15.9  |
|  | 65/07/25   | 72/10/15    | 38.2   | 60.0   | 17.0  | 9     | 18.9  |
| Red River near<br>Pine Ridge           | 76/01/16   | 76/08/17    | 2.12   | 2.9    | 1.9   | 5     | .44   |
|  | 69/03/20   | 76/08/17    | 2.9    | 6.2    | 1.4   | 70    | 1.02  |
| Kentucky River Lock 4                  | 70/10/07   | 72/10/21    | 42.3   | 56.0   | 34.0  | 3     | 11.0  |
|  | 67/07/27   | 72/10/21    | 42.2   | 56.0   | 33.0  | 6     | 10.5  |
|  | 59/10/25   | 72/10/21    | 17     | 56.0   | 4.1   | 17    | 18.3  |

Table H-9  
Continued

| Station                                | Beg.<br>Date                               | End<br>Date | Mean | Max. | Min. | #OBS. | S     |
|--|--|-------------|------|------|------|-------|-------|
| Kentucky River Lock 2                  | 76/01/07                                   | 76/11/02    | 7.7  | 12.0 | 3.7  | 11    | 3.37  |
|  | 73/02/07                                   | 76/11/02    | 6.6  | 16.0 | 2.3  | 47    | 3.08  |
| Eagle Creek at<br>Glencoe              | 75/01/30                                   | 75/12/18    | 6.2  | 11.0 | 3.5  | 9     | 2.24  |
|  | 70/08/06                                   | 74/12/09    | 4.6  | 9.1  | 1.7  | 47    | 1.72  |
|  | 62/01/25                                   | 74/12/09    | 4.5  | 9.1  | 1.7  | 49    | 1.77  |
| STORET #00934                          | Potassium mg/l, No Standard                |             |      |      |      |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28                                   | 76/09/02    | 2.3  | 3.0  | 1.60 | 6     | 0.579 |
|  | 70/07/07                                   | 76/09/02    | 2.8  | 5.8  | 1.4  | 56    | 0.985 |
| North Fork Kentucky<br>River at Hazard | 70/11/03                                   | 72/10/15    | 5.8  | 8.0  | 3.4  | 3     | 2.31  |
|  | 65/07/25                                   | 72/10/15    | 5.3  | 8.0  | 3.4  | 6     | 1.70  |
| Red River near<br>Pine Ridge           | 76/01/16                                   | 76/08/17    | 1.34 | 1.8  | 1.0  | 5     | 0.38  |
|  | 69/03/20                                   | 76/08/17    | 1.91 | 4.2  | 1.0  | 70    | 0.77  |
| Kentucky River Lock 4                  | 70/10/07                                   | 72/10/21    | 3.9  | 4.6  | 3.4  | 3     | .611  |
|  | 67/07/27                                   | 72/10/21    | 3.4  | 4.6  | 2.7  | 6     | .713  |
|  | 59/10/25                                   | 72/10/21    | 2.6  | 4.6  | 1.6  | 17    | .801  |
| Kentucky River Lock 2                  | 76/01/07                                   | 76/11/02    | 2.16 | 2.9  | 1.3  | 11    | 0.609 |
|  | 73/02/07                                   | 76/11/02    | 2.3  | 3.7  | 1.3  | 47    | 0.687 |
| Eagle Creek near<br>Glencoe            | 74/01/30                                   | 75/12/18    | 3.0  | 4.0  | 1.9  | 9     | .813  |
|  | 70/08/06                                   | 74/12/09    | 3.4  | 5.8  | 1.7  | 47    | 1.10  |
|  | 62/01/25                                   | 74/12/09    | 3.4  | 5.8  | 1.7  | 49    | 1.10  |
| STORET #00940                          | Chloride mg/l, Prop. EPA Standard 250 mg/l |             |      |      |      |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28                                   | 76/09/02    | 3.7  | 7.3  | 2.3  | 6     | 1.80  |
|  | 70/07/07                                   | 76/09/02    | 4.3  | 13.0 | 1.0  | 56    | 2.69  |
| North Fork Kentucky<br>near Hazard     | 75/01/16                                   | 75/01/16    | 7.3  |      |      | 1     |       |
|  | 70/01/31                                   | 73/09/15    | 6.2  | 36.0 | 1.5  | 90    | 5.09  |
|  | 62/10/08                                   | 73/09/15    | 7.7  | 40.0 | .00  | 257   | 6.31  |
| Red River near<br>Hazel Green          | 70/10/02                                   | 72/09/12    | 6.3  | 6.7  | 5.7  | 3     | .513  |

Table H-9  
Continued

| Station                                | Beg.<br>Date                                | End<br>Date | Mean  | Max.  | Min. | #OBS. | S     |
|--|---|-------------|-------|-------|------|-------|-------|
| Red River near<br>Pine Ridge           | 76/01/16                                    | 76/08/17    | 2.18  | 2.9   | 1.6  | 5     | 0.59  |
|  | 69/03/20                                    | 76/08/17    | 3.8   | 8.0   | 1.1  | 70    | 1.69  |
| Kentucky River Lock 4                  | 70/01/02                                    | 73/09/26    | 16.0  | 130.0 | 1.9  | 92    | 20.1  |
|  | 65/01/13                                    | 73/09/26    | 19.7  | 130.0 | 1.9  | 208   | 23.7  |
|  | 59/10/25                                    | 73/09/26    | 19.6  | 130.0 | 1.9  | 283   | 22.9  |
| Kentucky River Lock 2                  | 76/01/07                                    | 76/11/02    | 10.77 | 20.0  | 4.8  | 11    | 5.42  |
|  | 73/02/07                                    | 76/11/02    | 9.5   | 29.0  | 3.1  | 47    | 4.98  |
| Eagle Creek at<br>Glencoe              | 75/01/30                                    | 75/12/18    | 7.3   | 18.0  | 3.0  | 8     | 4.44  |
|  | 70/08/06                                    | 74/12/09    | 8.0   | 80.0  | 2.3  | 48    | 10.9  |
|  | 62/01/25                                    | 74/12/09    | 7.7   | 80.0  | 1.0  | 50    | 10.7  |
| STORET # 00945                         | Sulfate (mg/l), Prop. EPA Standard 250 mg/l |             |       |       |      |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28                                    | 76/09/02    | 66.8  | 79.0  | 50.0 | 6     | 11.4  |
|  | 70/07/07                                    | 76/09/02    | 80.1  | 186.0 | 23.0 | 56    | 25.5  |
| North Fork Kentucky<br>River at Hazard | 75/01/16                                    | 75/01/16    | 71.0  |       |      | 1     |       |
|  | 70/01/31                                    | 74/06/11    | 132.2 | 340.0 | 13.0 | 91    | 74.4  |
|  | 62/10/08                                    | 74/06/11    | 150.6 | 997.0 | 13.0 | 258   | 108.1 |
| Red River near<br>Hazel Green          | 70/10/02                                    | 72/09/12    | 16.7  | 19.0  | 13.0 | 3     | 3.2   |
| Red River near<br>Pine Ridge           | 76/01/16                                    | 76/08/17    | 13.2  | 14.0  | 13.0 | 5     | 0.45  |
|  | 69/03/20                                    | 76/08/17    | 14.1  | 22.   | 9.2  | 71    | 2.5   |
| Kentucky River Lock 4                  | 70/01/02                                    | 73/09/26    | 37.8  | 89.0  | 18.0 | 92    | 13.2  |
|  | 65/01/13                                    | 73/09/26    | 35.8  | 89.0  | 17.0 | 208   | 12.0  |
|  | 59/10/25                                    | 73/09/26    | 34.0  | 89.0  | 13.0 | 283   | 11.9  |
| Kentucky River Lock 2                  | 76/01/07                                    | 76/11/02    | 35.18 | 44.0  | 30.0 | 11    | 5.56  |
|  | 73/02/07                                    | 76/11/02    | 32.72 | 51.0  | 21.0 | 47    | 6.92  |
| Eagle Creek at<br>Glencoe              | 75/01/30                                    | 75/12/18    | 53.1  | 91.0  | 35.0 | 8     | 17.7  |
|  | 70/08/06                                    | 74/12/09    | 43.5  | 100.0 | 19.0 | 48    | 15.9  |
|  | 62/01/25                                    | 74/12/09    | 42.7  | 100.0 | 19.0 | 50    | 16.2  |

Table H- 9  
Continued

| Station                                | Beg.<br>Date                           | End<br>Date | Mean  | Max.  | Min. | #OBS. | S    |
|--|--|-------------|-------|-------|------|-------|------|
| Eagle Creek at Glencoe                 | 75/01/30                               | 75/12/18    | .27   | .60   | .10  | 9     | .141 |
|  | 70/08/06                               | 74/12/09    | .29   | 1.1   | .10  | 48    | .188 |
|  | 62/01/25                               | 74/12/09    | .294  | 1.1   | 0.1  | 50    | .189 |
| STORET #00915                          | Calcium, Milligrams/liter, No Standard |             |       |       |      |       |      |
| Carr Fork near<br>Sassafras            | 76/01/28                               | 76/09/02    | 26.2  | 35.0  | 18.0 | 6     | 5.9  |
|  | 70/07/07                               | 76/09/02    | 29.3  | 57.0  | 7.7  | 56    | 11.1 |
| North Fork Kentucky<br>River at Hazard | 70/11/03                               | 72/10/15    | 60.0  | 72.0  | 38.0 | 3     | 19.1 |
|  | 68/10/13                               | 72/10/15    | 73.4  | 131.0 | 38.0 | 5     | 35.0 |
| Red River near<br>Pine Ridge           | 76/01/16                               | 76/08/17    | 7.44  | 9.4   | 6.3  | 5     | 1.28 |
|  | 69/03/20                               | 76/08/17    | 10.09 | 17.0  | 3.5  | 70    | 3.49 |
| Kentucky River Lock 4                  | 70/10/07                               | 72/10/21    | 46.3  | 50.0  | 42.0 | 3     | 4.04 |
|  | 68/12/11                               | 72/10/21    | 50.4  | 47.0  | 42.0 | 5     | 6.27 |
|  | 59/10/25                               | 72/10/21    | 36.7  | 57.0  | 21.0 | 19    | 11.1 |
| Kentucky River Lock 2                  | 76/01/07                               | 76/11/02    | 33.1  | 39.0  | 27.0 | 11    | 3.36 |
|  | 73/02/07                               | 76/11/02    | 33.96 | 47.0  | 15.0 | 47    | 5.32 |
| Eagle Creek at Glencoe                 | 75/01/30                               | 75/12/18    | 64.8  | 94.0  | 46.0 | 9     | 15.8 |
|  | 70/08/06                               | 74/12/09    | 60.3  | 88.0  | 29.0 | 47    | 14.4 |
|  | 62/01/24                               | 74/12/09    | 59.6  | 88.0  | 29.0 | 49    | 14.7 |
| STORET #00925                          | Magnesium, mg/l, No Standard           |             |       |       |      |       |      |
| Carr Fork near<br>Sassafras            | 76/01/28                               | 76/09/02    | 10.2  | 12.0  | 7.6  | 6     | 1.78 |
|  | 70/07/07                               | 76/09/02    | 11.6  | 22.0  | 3.5  | 56    | 3.55 |
| North Fork Kentucky<br>River at Hazard | 70/11/03                               | 72/10/15    | 25.3  | 29.0  | 20.0 | 3     | 4.73 |
|  | 68/10/13                               | 72/10/15    | 24.0  | 29.0  | 20.0 | 5     | 3.87 |
| Red River near<br>Pine Ridge           | 76/01/16                               | 76/08/17    | 2.4   | 3.0   | 2.0  | 5     | .381 |
|  | 69/03/20                               | 76/08/17    | 3.27  | 6.3   | 1.7  | 70    | .949 |
| Kentucky River Lock 4                  | 70/10/07                               | 72/10/21    | 13.0  | 14.0  | 11.0 | 3     | 1.73 |
|  | 68/12/11                               | 72/10/21    | 12.6  | 14.0  | 11.0 | 5     | 1.34 |
|  | 59/10/25                               | 72/10/21    | 7.5   | 14.0  | 3.1  | 19    | 3.38 |

Table H-9  
Continued

| Station                                | Beg.<br>Date                                 | End<br>Date | Mean  | Max. | Min. | #OBS. | S     |
|--|--|-------------|-------|------|------|-------|-------|
| STORET #00618                          | Nitrate - N mg/l, Prop. EPA Standard 10 mg/l |             |       |      |      |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28                                     | 76/09/02    | 0.20  | 0.37 | 0.02 | 6     | 0.155 |
|  | 71/10/19                                     | 76/09/02    | 0.34  | 4.5  | 0.0  | 44    | 0.669 |
| North Fork Kentucky<br>at Hazard       | 71/10/18                                     | 73/09/15    | .54   | 2.2  | .10  | 50    | .329  |
| Red River near<br>Hazel Green          | 72/09/12                                     | 72/09/12    | 1.1   |      |      | 1     |       |
| Red River near<br>Pine Ridge           | 76/01/16                                     | 76/08/17    | 0.254 | 0.49 | 0.14 | 5     | 0.138 |
|  | 71/10/27                                     | 76/08/17    | 0.176 | 0.50 | 0.00 | 45    | 0.133 |
| Kentucky River Lock 4                  | 71/10/06                                     | 73/09/26    | .70   | 1.2  | .40  | 49    | .189  |
| Eagle Creek at Glencoe                 | 75/01/30                                     | 75/12/18    | .35   | .66  | .01  | 8     | .224  |
|  | 71/10/14                                     | 74/12/09    | .40   | 1.1  | .00  | 33    | .351  |
| STORET #00950                          | Fluoride mg/l Prop. EPA Standard 1.0 mg/l    |             |       |      |      |       |       |
| Carr Fork near<br>Sassafras            | 76/01/28                                     | 76/09/02    | 0.13  | 0.20 | 0.10 | 6     | 0.05  |
|  | 70/07/07                                     | 76/09/02    | 0.17  | 0.70 | 0.00 | 56    | 0.11  |
| North Fork Kentucky<br>River at Hazard | 70/09/16                                     | 73/03/30    | .45   | 3.7  | .10  | 12    | 1.02  |
|  | 68/10/13                                     | 73/03/30    | .41   | 3.7  | .10  | 14    | .94   |
| Red River near<br>Hazel Green          | 70/10/02                                     | 72/09/12    | .10   | .10  | .10  | 3     | .00   |
| Red River near<br>Pine Ridge           | 76/01/16                                     | 76/08/17    | 0.14  | 0.20 | 0.10 | 5     | 0.055 |
|  | 69/03/20                                     | 76/08/17    | 0.13  | 0.40 | 0.00 | 70    | 0.094 |
| Kentucky River Lock 4                  | 70/10/07                                     | 72/10/21    | .17   | .30  | .10  | 6     | .082  |
|  | 67/07/27                                     | 72/10/21    | .18   | .30  | .10  | 9     | .067  |
|  | 59/10/25                                     | 72/10/21    | .21   | .40  | .10  | 18    | .073  |
| Kentucky River Lock 2                  | 76/01/07                                     | 76/11/02    | .20   | .30  | .00  | 11    | .077  |
|  | 73/02/07                                     | 76/11/02    | .199  | .50  | .00  | 47    | .099  |

Table H-9  
Continued

| Station                                | Beg.<br>Date  | End<br>Date | Mean  | Max.   | Min. | #OBS. | S      |
|--|---|-------------|-------|--------|------|-------|--------|
| Kentucky River Lock 2                  | 75/01/07  | 75/12/04    | 6.6   | 8.4    | 5.4  | 12    | 1.08   |
|  | 73/02/07  | 74/12/09    | 6.4   | 11.0   | 3.9  | 24    | 1.57   |
| Eagle Creek at Glencoe                 | 75/01/30  | 75/12/18    | 11.4  | 21.0   | 6.8  | 9     | 4.16   |
|  | 70/08/06  | 74/12/09    | 8.7   | 20.0   | 4.2  | 47    | 3.25   |
|  | 62/01/25  | 74/12/09    | 8.5   | 20.0   | 4.2  | 49    | 3.3    |
| STORET #01025                          | Cadium, micrograms/liter, Kentucky Standarg, 100 ug/l |             |       |        |      |       |        |
| North Fork Kentucky<br>River at Hazard | 75/03/20  | 75/06/17    | .33   | 1.0    | .00  | 3     | .577   |
|  | 74/04/16  | 74/10/03    | 1.25  | 4.0    | .00  | 4     | 1.89   |
|  | 63/10/25  | 74/10/03    | .50   | 4.0    | .0   | 10    | 1.27   |
| Red River near<br>Hazel Green          | 76/01/16  | 76/08/17    | 1.75  | 6.0    | .00  | 4     | 2.87   |
|  | 75/07/08  | 76/08/17    | 1.33  | 6.0    | .00  | 6     | 2.33   |
| Kentucky River Lock 4                  | 75/01/22  | 75/04/21    | .67   | 1.0    | .00  | 3     | .577   |
|  | 74/03/11  | 74/09/30    | 1.0   | 6.0    | .00  | 7     | 2.24   |
|  | 62/11/12  | 74/09/30    | .41   | 6.0    | .00  | 17    | 1.46   |
| Kentucky River Lock 2                  | 76/01/07  | 76/10/07    | 1.00  | 2.0    | .00  | 4     | 1.15   |
|  | 73/04/17  | 76/10/07    | 1.44  | 7.0    | .00  | 16    | 1.71   |
| Eagle Creek at Glencoe                 | 75/06/06  | 75/06/06    | .00   |        |      | 1     |        |
|  | 74/03/16  | 74/12/09    | 2.7   | 7.0    | .00  | 6     | 2.58   |
| STORET # 01056                         | Manganese, micrograms/liter Prop. Standard 50 ug/l    |             |       |        |      |       |        |
| Carr Fork near<br>Sassafras            | 76/01/28  | 76/09/02    | 160.0 | 360.0  | 20.0 | 6     | 124.42 |
|  | 71/10/19  | 76/09/02    | 325.2 | 1200.0 | 5.99 | 43    | 197.72 |
| North Fork Kentucky<br>River at Hazard | 74/04/16  | 74/04/16    | 83.0  |        |      | 1     |        |
| Red River near<br>Pine Ridge           | 76/01/16  | 76/08/17    | 14.0  | 20.0   | 0.00 | 5     | 8.94   |
|  | 69/03/20  | 76/08/17    | 32.1  | 180.0  | 0.00 | 65    | 32.19  |
| Kentucky River Lock 4                  | 75/04/21  | 75/04/21    | 40.0  |        |      | 1     |        |
| Kentucky River Lock 2                  | 76/01/07  | 76/10/07    | 12.5  | 20.0   | .00  | 4     | 9.57   |
|  | 73/04/17  | 76/10/07    | 14.4  | 43.0   | .00  | 16    | 13.22  |

Table H-9  
Continued

| Station                                | Beg.<br>Date                                       | End<br>Date                      | Mean                 | Max.            | Min.         | #OBS.         | S                 |
|--|--|----------------------------------|----------------------|-----------------|--------------|---------------|-------------------|
| Eagle Creek at Glencoe                 | 75/01/30<br>71/10/14                               | 75/12/18<br>74/12/09             | 14.0<br>32.5         | 40.0<br>180.0   | .00<br>.00   | 9<br>32       | 11.5<br>37.4      |
| STORET #01046                          | Iron, micrograms/liter, EPA Standard 300 u g/l     |                                  |                      |                 |              |               |                   |
| Carr Fork near<br>Sassafras            | 76/01/28<br>71/10/19                               | 76/09/02<br>76/09/02             | 56.66<br>101.80      | 140.0<br>859.99 | .00<br>.00   | 6<br>43       | 59.21<br>186.09   |
| North Fork Kentucky<br>River at Hazard | 74/04/16<br>65/01/07<br>64/12/01                   | 74/04/16<br>74/04/16<br>74/04/16 | 10.0<br>65.8<br>76.7 | 450.0<br>450.0  | .00<br>.00   | 1<br>19<br>21 | 116.6<br>116.5    |
| Red River near<br>Pine Ridge           | 76/01/16<br>69/03/20                               | 76/08/17<br>76/08/17             | 12.0<br>142.7        | 30.0<br>740.0   | 0.00<br>0.00 | 5<br>66       | 13.038<br>125.435 |
| Kentucky River Lock 4                  | 75/04/21   | 74/04/21                         | 10.0                 |                 |              | 1             |                   |
| Kentucky River Lock 2                  | 76/01/07<br>73/04/17                               | 76/10/07<br>76/10/07             | 10.0<br>23.13        | 30.0<br>90.0    | .00<br>.00   | 4<br>16       | 14.14<br>30.70    |
| Eagle Creek at Glencoe                 | 75/01/30<br>71/10/14                               | 74/12/18<br>74/12/09             | 67.8<br>95.6         | 210.0<br>280.0  | 10.0<br>10.0 | 9<br>32       | 59.3<br>66.2      |
| STORET #01030                          | Chromium, micrograms/liter, EPA Standard 300 u g/l |                                  |                      |                 |              |               |                   |
| North Fork Kentucky<br>River at Hazard | 75/03/20<br>74/04/16                               | 75/06/17<br>74/10/03             | .33<br>.25           | 1.0<br>1.0      | .00<br>.00   | 3<br>4        | .577<br>.500      |
| Red River near<br>Hazel Green          | 76/01/16<br>75/07/08                               | 76/08/17<br>76/08/17             | 4.50<br>3.00         | 18.0<br>18.0    | .00<br>.00   | 4<br>6        | 9.0<br>7.35       |
| Kentucky River Lock 4                  | 75/01/22<br>74/03/11                               | 75/04/21<br>74/09/30             | 1.3<br>1.9           | 4.0<br>10.0     | .00<br>.00   | 3<br>7        | 2.31<br>3.63      |
| Kentucky River Lock 2                  | 76/01/07<br>73/04/17                               | 76/10/07<br>76/10/07             | 2.0<br>.80           | 8.0<br>8.0      | .00<br>.00   | 4<br>15       | 4.00<br>2.04      |
| Eagle Creek at Glencoe                 | 75/06/06<br>74/03/16                               | 75/06/06<br>74/12/09             | 1.0<br>.67           | 1.0             | .00          | 1<br>6        | .516              |



Table H-9  
Continued

| Station                                | Beg.<br>Date  | End<br>Date | Mean | Max. | Min. | #OBS. | S     |
|--|---|-------------|------|------|------|-------|-------|
| STORET #01049                          | Lead, micrograms/liter, Kentucky Standard 50 $\mu$ g/l    |             |      |      |      |       |       |
| North Fork Kentucky<br>River at Hazard | 75/03/20  | 75/06/17    | 3.3  | 6.0  | .00  | 3     | 3.06  |
|  | 74/04/16  | 74/10/03    | 1.7  | 3.0  | .00  | 3     | 1.53  |
|  | 63/10/25  | 74/10/03    | .556 | 3.0  | .0   | 9     | 1.13  |
| Red River near<br>Hazel Green          | 76/01/16  | 76/08/17    | 2.25 | 5.0  | .00  | 4     | 2.63  |
|  | 75/07/08  | 76/08/17    | 3.16 | 7.0  | .00  | 6     | 2.78  |
| Kentucky River Lock 4                  | 75/01/22  | 75/04/21    | 4.0  | 8.0  | 1.0  | 3     | 3.61  |
|  | 74/03/11  | 74/09/30    | 8.0  | 20.0 | 1.0  | 7     | 6.30  |
|  | 62/11/12  | 74/09/30    | 3.3  | 20.0 | 0.   | 17    | 5.60  |
| Kentucky River Lock 2                  | 76/01/07  | 76/10/07    | 2.5  | 6.0  | .00  | 4     | 3.00  |
|  | 73/04/17  | 76/10/07    | 2.94 | 6.0  | .00  | 16    | 2.205 |
| Eagle Creek at Glencoe                 | 75/06/06  | 75/06/06    | 2.0  |      |      | 1     |       |
|  | 74/03/16  | 74/12/09    | 10.2 | 32.0 | .00  | 6     | 12.6  |
| STORET #01000                          | Arsenic, micrograms/liter, Kentucky Standard 50 $\mu$ g/l |             |      |      |      |       |       |
| North Fork Kentucky<br>River at Hazard | 75/03/20  | 75/06/17    | .33  | 1.0  | .00  | 3     | .577  |
|  | 74/04/16  | 74/10/03    | .00  | .00  | .00  | 4     | .000  |
|  | 63/10/25  | 74/10/03    | .56  | 3.0  | .0   | 9     | 1.13  |
| Red River near<br>Hazel Green          | 76/01/16  | 76/08/17    | .00  | .00  | .00  | 4     | .00   |
|  | 75/07/08  | 76/08/17    | .00  | .00  | .00  | 6     | .00   |
| Kentucky River Lock 4                  | 75/01/22  | 75/04/21    | .33  | 1.0  | .00  | 3     | .577  |
|  | 74/03/11  | 74/09/30    | 2.6  | 12.0 | .00  | 7     | 4.39  |
|  | 62/11/12  | 74/09/30    | 1.06 | 12.0 | .0   | 17    | 3.00  |
| Kentucky River Lock 2                  | 76/01/07  | 76/10/07    | .25  | 1.0  | .00  | 4     | .50   |
|  | 73/04/17  | 76/10/07    | 1.06 | 4.0  | .00  | 16    | 1.48  |
| Eagle Creek at Glencoe                 | 74/06/06  | 75/06/06    | 1.0  |      |      | 1     |       |
|  | 74/03/16  | 74/12/09    | 1.2  | 2.0  | .00  | 6     | .753  |

#### Bacteriological Data

Total Coliform colonies per 100 ml. STORET #31503 Kentucky Standard 1,000/100 ml  
Fecal Coliform colonies per 100 ml. STORET #31616

#### North Fork Kentucky River, Hazard

|                |          |          |      |       |    |    |
|----------------|----------|----------|------|-------|----|----|
| Total Coliform | 75/02/12 | 75/11/17 | 9160 | 31000 | 0  | 11 |
| Fecal Coliform | 75/02/12 | 75/08/13 | 770  | 1515  | 50 | 7  |

Table H-9  
Bacteriological Continued

| Station                       | Beg.<br>Date | End<br>Date | Mean  | Max.   | Min. | #OBS. | S |
|-------------------------------|--------------|-------------|-------|--------|------|-------|---|
| Kentucky River, Richmond WPI  |              |             |       |        |      |       |   |
| Total Coliform                | 75/01/21     | 75/12/23    | 409   | 1600   | 0    | 11    |   |
|                               | 74/04/15     | 75/12/23    | 665   | 7000   | 0    | 22    |   |
| Fecal Coliform                | 75/09/10     |             | 70    |        |      | 1     |   |
|                               | 74/09/24     | 75/09/10    | 28    | 70     | 0    | 4     |   |
| Kentucky River, Lexington WPI |              |             |       |        |      |       |   |
| Total Coliform                | 75/01/21     | 75/12/23    | 476   | 1600   | 41   | 12    |   |
|                               | 74/04/15     | 75/12/23    | 469   | 1600   | 20   | 22    |   |
| Fecal Coliform                | 75/07/22     | 75/12/18    | 16    | 30     | 0    | 3     |   |
| Dix River, Danville WPI       |              |             |       |        |      |       |   |
| Total Coliform                | 75/01/30     | 75/12/17    | 322   | 1600   | 0    | 12    |   |
|                               | 74/04/15     | 75/12/17    | 267   | 1600   | 0    | 23    |   |
| Fecal Coliform                | 74/09/24     | 74/11/26    | 10    | 30     | 0    | 3     |   |
| Kentucky River, Lock #8       |              |             |       |        |      |       |   |
| Total Coliform                | 75/01/21     | 75/12/23    | 554   | 1600   | 4    | 11    |   |
|                               | 74/04/15     | 75/12/23    | 546   | 2050   | 4    | 22    |   |
| Fecal Coliform                | 74/09/24     | 75/09/10    | 31    | 96     | 0    | 4     |   |
| Kentucky River, Frankfort WPI |              |             |       |        |      |       |   |
| Total Coliform                | 75/07/31     | 75/12/17    | 2788  | 11000  | 115  | 6     |   |
|                               | 74/04/30     | 75/12/17    | 25778 | 180000 | 115  | 14    |   |
| Fecal Coliform                | 75/08/26     | 75/12/17    | 1622  | 6700   | 200  | 5     |   |